PLAYSTATION: Sony's boss reveals how PlayStation will fight Nintendo's Ultra 64

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NEXT GENERATION

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March 1996

Gaming on the edge

HyperBlade on the PC challenges PlayStation, Sega Saturn, and 3DO

Console-style hockey action from Activision's *Hyperblade* leads the PC's attack on 32-bit videogames

volume two

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14 PAGE BONUS
The essential videogame dictionary, starting on page 28

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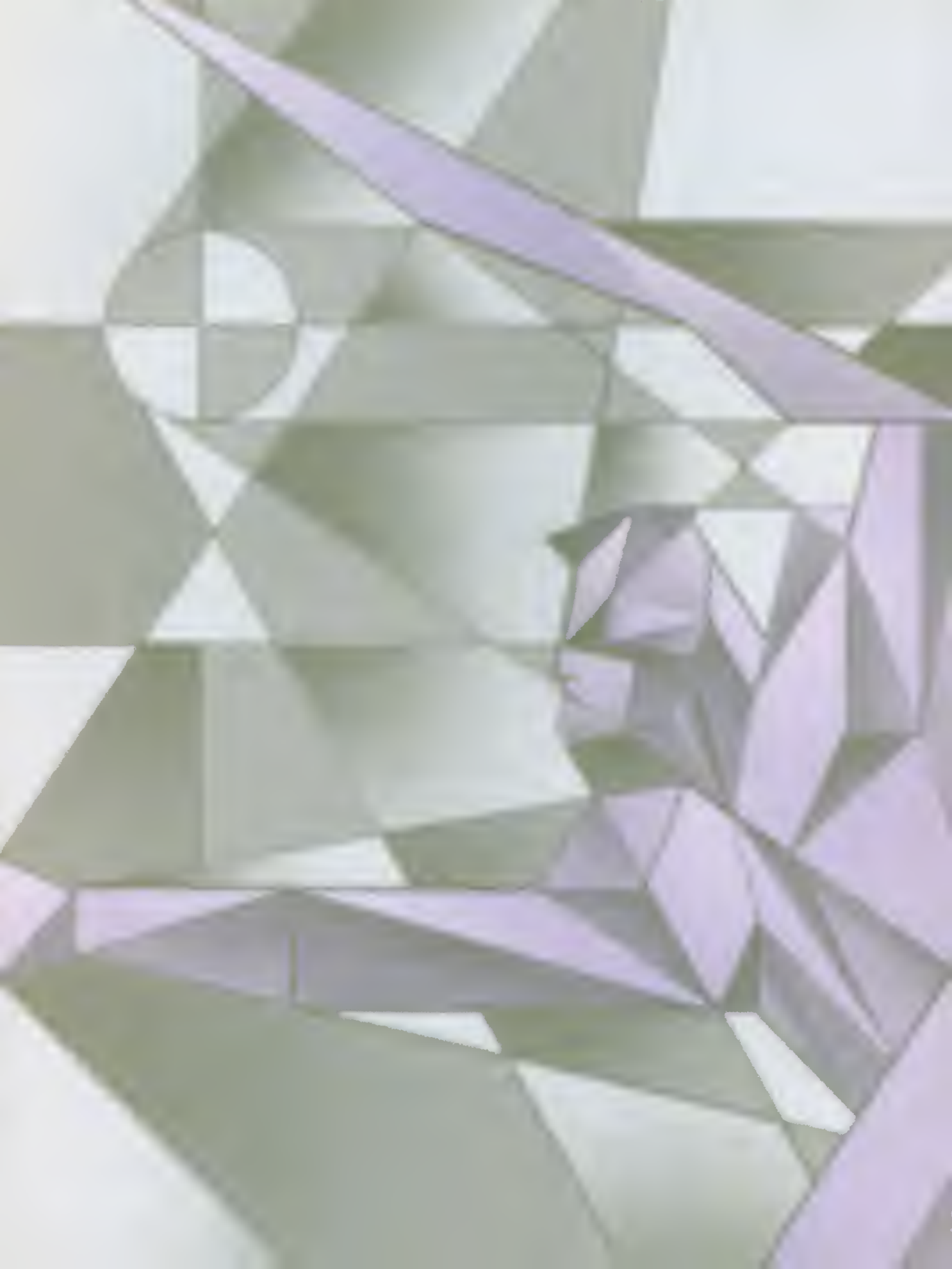
Hyperblade from Activision combines the pace and style of hockey with arcade-style fighting action. Fans of the Bitmap Bros.' *Speedball* will enjoy the mix. But will PC gamers embrace this direct challenge to Sony and Sega?

SEGA SATURN: *Battle Arena Toshinden Remix* and *Thunderstrike 2* reviewed



The PC learns to fight

While Sony, Sega, 3DO, Atari, and Nintendo **squabble** over the videogame business, the PC game scene continues to grow. The truth is that a Pentium-based PC remains the state-of-the-art gaming platform of choice for the majority of US gamers, despite how much noise Sony might make celebrating its **1 millionth PlayStation** sold.

But instead of merely capitalizing on the PCs strengths — most noticeably its ability to store large amounts of game data, and the breadth of communication facilitated by its keyboard — game developers are increasingly keen to tackle the consoles head on. **Arcade-style action games** are currently **in vogue**, and sooner or later one of them will better PlayStation's or Saturn's best. With a plethora of 3D graphics cards and "multimedia accelerators" awaiting launch, the PC's strength in genres currently dominated by dedicated game machines will only increase.

Hyperblade is one such game that ventures to compete on Sega's and Sony's home turf. See page 46 for an exclusive preview.

But as the upgradeable PC's strength **progressively increases**, the graphic power of consoles jumps in leaps and bounds. Nintendo promises that Ultra 64 will offer a revolution in performance, leaving the PC behind once again. Caught in the middle of this battle is **Sony**. Marty Homlish, Sony's president, reveals how he will battle this new threat on page 6.

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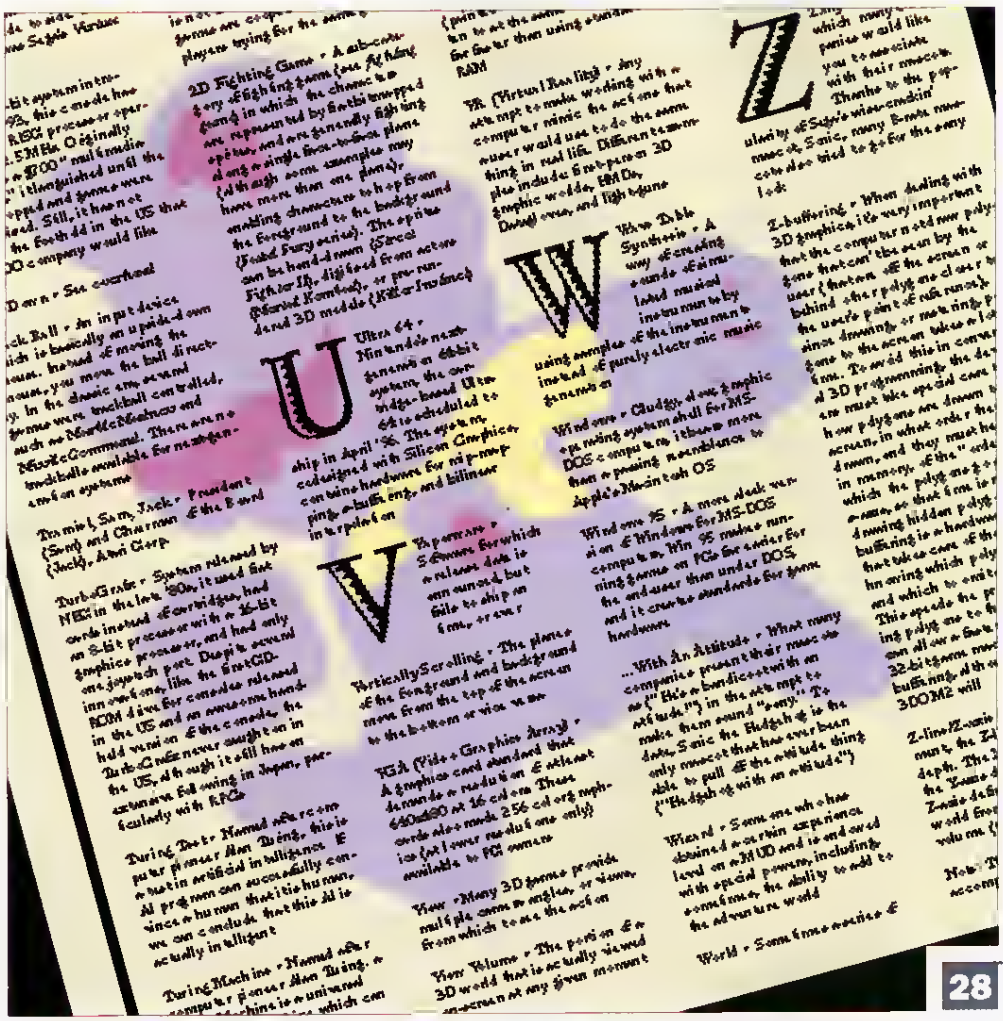
6

Can PlayStation compete with Ultra 64?

PlayStation ain't the hottest game box on the streets any more. **NEXT Generation** talks with Marty Homlish, SCEA's president to discuss PlayStation's eloquent success in 1995 and how the company plans to deal with the imminent arrival of Nintendo's Ultra 64



U

Ultra 64 - Nintendo's next generation 64-bit gaming system, the code-named Ultra 64 is scheduled to ship in April '96. The system, co-designed with Silicon Graphics, contains hardware for ray-tracing, shading, texturing, and bilinear interpolation

V

Voxel - A method of creating three-dimensional images in real time by using samples of the image instead of purely electronic means

W

Windows - Shorthand for Microsoft's operating system which runs on IBM-PC computers. Windows is a proprietary standard as opposed to an open OS like Apple's Macintosh OS

Windows 95 - A more sleek version of Windows for MS-DOS computers. Win 95 makes running games on PCs far easier for the end-user than under DOS, and it creates standards for game hardware

...With An Attitude - What many companies present their music as ("Bite a bandicoot with an attitude") in the attempt to make them sound "edgy." To date, Sonic the Hedgehog is the only mascot that has ever been able to pull off the attitude thing ("Hedgehogs with an attitude")

Wizard - Someone who has obtained a certain experience level on a MUD and is endowed with special powers, including sometimes the ability to add to the adventure world

World - Sometimes another term for

Z-buffering - When dealing with 3D graphics, it's very important that the computer instead new polygons that can't be seen by the user, that is, the screen or behind other polygons that cannot be seen from the user's point of view. Since drawing or rendering polygons takes a lot of time to the screen, which takes a lot of time, To avoid this in computer games, programmers must take special care to draw polygons in a certain order, that is, in what order the polygons are drawn to the screen, and they must be drawn, and they must be in memory, of the "order" in which the polygons are drawn, avoiding hidden polygons, that take up time. Z-buffering is a hardware technique which polygons are drawn and which to omit. This speeds the process of drawing polygons on all over a Sega 32-bit system, most buffering all the 3DO M2 will

Z-line - Z-axis, the Z-depth. The Z-axis is the same as the Z-axis in the world from the volume (

Note: The accompanying

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The NEXT Generation lexicon: gaming terminology from A to Z

Are you tired of trying to find a way of explaining yourself to family and friends? Venture capitalists not understanding the final points of your proposal? **NEXT Generation** delivers on its promise to its dedicated readers with the final word (literally) in tech talk

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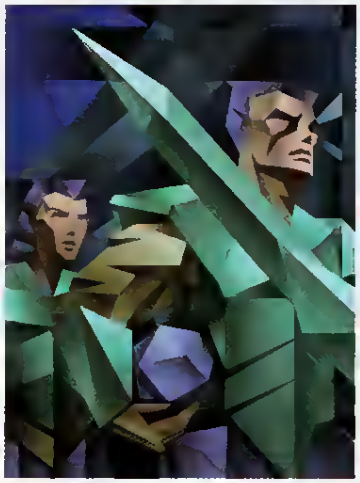

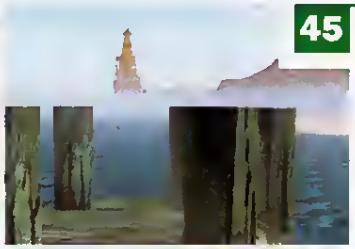

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Alphas
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TEEN
AGES 13+

PlayStation

Meet Martin "Marty" Homlish, the president of Sony Computer Entertainment of America. He's just sold almost 1 million* PlayStations in the US, and is rather pleased with himself. Wait a minute, though, Marty, Nintendo's Ultra 64 is looking damn hot, and **NEXT Generation** wants to know...

"I have to ask you, why do you think that Ultra 64 is more advanced than PlayStation?"

Can PlayStation compete with Ultra 64?

*Sony claim that 800,000 PlayStations were sold in 1995. By the time you read this, it is predicted that Sony will have reached the 1 million mark

Photo: Mark Koehler

For Sony, 3DO, and Sega, 1995 was like a game of *SimCity* with the "disasters" option turned off. Each company was free to build its empire as fast or as slowly as it saw fit, each forging its own frontier on the "next-generation" wilderness. A gold-rush mentality prevailed, with virgin market share simply waiting to be invaded.

Sony played this game better than anyone else, and is the current 32-bit leader.

But in April 21 (if Howard Lincoln is to be believed), this metaphorical game of *SimCity* will change forever as the "disasters" option is turned on. All of a sudden Godzilla will be turned loose on this next-generation wilderness, destroying kingdoms, running rampant through carefully laid plans, and generally making business unpleasant for all its rivals. This particular Godzilla goes by the name of Nintendo, the most powerful videogame company in the world.

So with 1 million PlayStations already sold, how did Sony manage to get this far ahead? And is this head-start big enough to fend off Nintendo's attack? **NEXT Generation** met with Sony's Marty Homlish — a man never afraid to wave the company flag (and then wave it some more) — to find out.

SONY COMPUTER ENTERTAINMENT

Enter the dragon

NG: How much does the threat of Nintendo's Ultra 64 worry you?

Marty: Obviously Nintendo is a very, very capable competitor. And for any manufacturer to say they're not worried about competition would be imprudent.

But on the other hand, we've just gotten started. The second-generation PlayStation games that are coming — as the developers start to master the PlayStation platform and tools — are going to blow everybody away. I mean, this is the first year, these are the first games. Think about what's going to happen next year!

Also, I believe that gamers have embraced the compact disc format. There's something magical and mystical about CD-driven gaming that the consumers have stepped up and said "we love it, it's real, it's the future."

And if you take the power of the brand, the believability of the message, the challenge to the end user with the "You're not ready" campaign, you add the second-generation games, and add on top of that the fact that you're using compact disc as the software format, then you've got a natural pattern for success.

NG: If indeed Nintendo does launch Ultra 64 at $249 with *Super Mario 64* included, presumably you'll have to drop PlayStation's price to match it, or go even lower, right?

Marty: I think that we're going to continue with our plan as we have developed it.

NG: OK, so when does your plan tell you to make the next price drop?

Marty: I'm not sure that we need to worry about the next price drop right now.

NG: Really? You believe PlayStation can fight Ultra 64 priced at $299? That's very brave.

Marty: Oh, I think we need to wait and see how the market falls out. The consumer's got to make that final decision, and the consumer will decide what they're willing to pay for the best games in the marketplace.

NG: Ultra 64 is more powerful than PlayStation. How will PlayStation's sales change when it loses the mystique of being the most powerful machine on the block?

Marty: I have to ask you, why do you think that Ultra 64 is more advanced than PlayStation?

NG: It features all 64-bit processing, has a host of on-board graphic manipulation features and it is essentially two years further up the technology curve than PlayStation is. Plus, all the developers who were telling us that PlayStation was so much better than Saturn, are now saying that Ultra 64 eclipses both.

Marty: I think that the proof, again, is going to be in the games. You're comparing first-generation PlayStation software with the software that Ultra 64 is showing, but unfortunately you don't have the advantage of seeing what the next-generation of PlayStation software will look like.

NG: We saw Phil Harrison (of Sony Computer Entertainment Europe) secretly sneaking into Shoshinkai. Did you think about trying to witness Ultra 64 for yourself?

Marty: [Laughs] I don't think so. Think about Ultra 64 from the consumer's perspective. I believe that there's also the potential that consumers may look at cartridge-based software as old technology, because — if you think about the model that's been built, the paradigm that's been created — a lot of the cartridge-based software is sitting in shoe boxes in closets in homes around the country, it's not being played. They are yesterday's games.

The early leader

NG: How many PlayStations have been sold so far in the US?

Marty: The last number that we released, sometime in late October 1995, was of hardware sales of about 300,000, with a four-to-one hardware/software ratio. All of that was achieved basically in under six weeks.

Now, [Christmas 1995] I think that it's safe to say that we are close to tripling those numbers.

NG: So that's almost one million PlayStations sold in the US. How will these numbers compare to what you expect to hear from Sega regarding Saturn's performance in the US?

"We believe we're outselling our competitors by a five-to-one ratio"

Marty: We believe we're outselling our competitors by a five-to-one ratio.

NG: How about in Japan, where Sega is claiming that Saturn's got PlayStation beat?

Marty: I think it's holding its own in Japan, and it's doing very, very well worldwide.

NG: What percentage of the 32-bit market does PlayStation have?

Marty: Pretty close to the highest percentage you can have, how's that? No, we will literally have the dominating share of the market.

NG: If you got a chance to launch PlayStation all over again, what would you do differently?

Marty: I'd probably get a little more sleep! You know, no one would ever be able to say we did everything perfectly. But if I step back and look at all the elements of the launch, I think we were right on the money in terms of the way we approached the end user. And I think that's the key, because the consumer's perception of the Sony brand is very very important. We had to make sure that we could take that perception and use it to our advantage.

So in this case, we were able to take Sony — because Sony equals reliability, it equals performance, it equals high technology, cutting edge — but then we also had to make it equal the most incredible gaming experience.

NG: How do you feel PlayStation compares to the Walkman in terms of a Sony success story?

Marty: The PlayStation eclipses any Sony success story in relation to the sheer volume of product that was sold in the launch cycle. To make a comparison to the Walkman is different because when the Walkman was launched, the personal stereo industry didn't exist. The consumer had no idea what this thing was, and the consumer didn't really know that they had a need for a Walkman.

In terms of videogames, they have been here for a long time. We had somewhat of an educated consumer base, which really makes this particular victory even much sweeter, because the consumer knew what they were looking for. And the fact that they knew exactly what they wanted, and the fact that we came from zero and were able to pre-empt the marketplace in four months, says to me that this is an absolutely unprecedented success, not just in Sony's history, but in the history of the entire gaming industry.

NG: How much sweeter is PlayStation's success when you consider that this is the third time Sony has tried to enter the videogame market? In the past Sony failed with the MS-X standard, and then failed again when the deal to develop a CD-ROM drive for Nintendo's Super NES broke down.

Marty: Frankly, I'm not sure that this issue is all that critical.

Beginner's luck?

NG: How much do you think the Sony brand name helped PlayStation? Because there was debate within Sony before launch as to whether or not the Sony name might be perceived as too old and too sedate for gamers...

Marty: Well, the Sony brand name is obviously on the product, and the fact that it's on the product and it's made by Sony is a very important factor from the consumer's perspective because it's a brand name that has a high level of recognition and a tremendous amount of trust.

NG: So who bought all these PlayStations? Was it the die-hard gamers? Or was it older, more wealthy people who were getting into videogames for the first time?

Marty: Early on it was the die-hard gamers —

they waited in line. I mean, on September 9 at 12:01 am, there were consumers waiting on line at the malls to buy PlayStation, and they were the die-hard fanatical fringe gamers, I mean these guys just had to have it!

But as the momentum built and the word-of-mouth built and we moved into the Christmas season, now we're talking to a much broader-based consumer: There's going to be hundreds of thousands of PlayStation consoles and games under the trees in houses across the nation where people are going to be opening up their PlayStation for the first time, and they're probably not the fanatical gamers, but they're going to now open up the market for us even further.

NG: All along, Sony's marketing campaign has been based on getting back to basics, back to the actual games. Do you feel that this has worked?

Marty: Oh, absolutely. Because it can only work if you have games that you can show that will compel the end user to step up and buy.

NG: The great PlayStation games haven't come from the places that people were expecting. The quality of Sony's in-house games surprised everybody, whereas the big 16-bit companies like Virgin and Electronic Arts have been really slow to release PlayStation games. Why is this?

Marty: I think we blew away the whole industry because when the whole PlayStation concept was announced, I think everybody had a high level of confidence that Sony could build the hardware (obviously we've been the leader in compact disc technology since its development). But I think there was always a question: Can Sony deliver the games? And I think you hit it right on the head: the fact that we have been able to step up with in-house development and blow the competition away is really — in my opinion —well, that's where we've really delivered.

NG: Successful in-house development helps you make money, too.

Marty: Oh yeah, that's nice to know.

Sony's competition

NG: On the subject of branding, after Sega CD, 32X, and having been beaten by PlayStation in the 32-bit market, the Sega brand's got to have taken a bit of kicking recently, right?

Marty: I think that the PlayStation brand has truly been positioned as the leader in the market.

NG: ...And where does that leave Sega?

Marty: I think you should probably ask Sega!

NG: The end of 1995 saw both Atari and The 3DO Company move toward PC publishing. Do you see this as a waving of the white flag in the console wars?

Marty: You know, I'm not really sure what the true objective is there.

NG: What's your personal take on the whole 3DO/Matsushita/M2 deal? Is a dedicated M2-based game machine going to come to market?

Martin "Marty" Homlish joined the PlayStation project almost exactly at the time of its US launch

Marty: It's possible. Again, I think you'd probably need to ask Matsushita. I hate to sound glib, but I think you've got to get back again to the end user, and the end user is really pretty simple to satisfy. Sure it's tough to do, but their needs are simple.

First, you've got to convince them that you are dedicated to games, only dedicated to games, and will continue to be dedicated to the games. Number two, the only way you can prove that is to continue to come up with software that will blow everybody else away. And number three, you have to be consistent with that message over and over and over again. The end user will make the decision, and that decision is made on the retail floor. Today, the end users have made the decision that PlayStation has lived up to those requirements. And I think, going forward, that's going to continue to happen. As far as Matsushita, I think we'll have to wait and see, but I think, again, it's going to be in the gaming experience.

The Future of PlayStation

NG: A lot of people believe that no games machine priced over $200 can ever achieve the sort of sales that Genesis and Super NES managed. Do you believe that this is the case?

Marty: Take a look at the numbers that we've already achieved, and the market share that we have this year, and the price of the product that we're currently selling, and the conclusion is pretty interesting. We've broken some new ground.

"Obviously Nintendo is a very, very capable competitor, and for any manufacturer to say they're not worried about competition would be imprudent"

talking

"The key is in the entertainment experience, not 32-bits or 64-bits. I don't think that matters. I think what matters to the end user is, 'Who's got the best games?'"

NG: So you wouldn't agree with those industry analysts who point to Ultra 64 and to M2 and conclude that the 32-bit generation is pretty much going to be over before it's really begun?

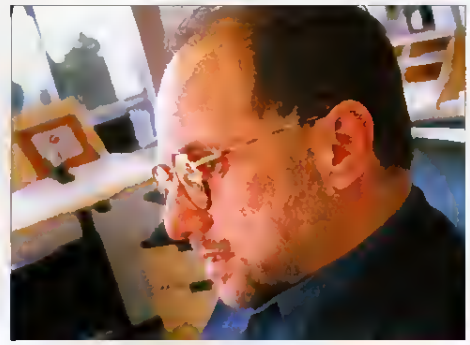
Marty: You know, from a consumer's perspective... I'm not sure the consumer really is going to care whether it's 32-bit, 64-bit or whatever. Having been in the audio business for years before I came here — when I launched compact discs for Sony — there was competition going on for years about 2 times oversampling versus 4 times oversampling versus 8 times oversampling versus 16 times oversampling, but it got to the point where the consumer said, "You know, I don't really care about all that. What does it mean to me? What does the technology mean? What is that going to do?"

And if it didn't deliver any tangible benefits to the end user, then the end user would step up and say, "Okay, that's great, but I'm going to buy the best-sounding compact disc player."

So in this case, the technology really is in the background, and the gaming experience is in the foreground. And that's the key to the success of the PlayStation. The key is in the entertainment experience, not 32-bits or 64-bits. I don't think that matters. I think what matters to the end user is, "Who's got the best games?" "Where am I going to have the most fun?" and, "Who will continue to provide the best games?" Now, that's the whole story.

NG: Fine, except that right now *Virtua Fighter 2* and *Sega Rally* are the two best home videogames available. They're kicking PlayStation's best — and so far you have no second-generation software of your own with which to answer them. If you were Tom Kalinske [Sega of America's president] right now, you must figure on being able to leverage more success in 1996, right?

Marty: [laughs] We all have our challenges. But, you know, like I said earlier to you, you should probably ask Sega.



Can Sony hope for PlayStation's momentum to keep up in the face of Ultra 64? Homlish claims it can

NG: Rumors persist that Psygnosis' PlayStation titles will be released for Saturn. Can you comment on this? And if it's true, how damaging is it for PlayStation?

Marty: Yeah, I think that probably the best thing is for you to speak to Psygnosis.

NG: How does PlayStation fit into Sony's larger plans? Does DVD fit into the PlayStation picture?

Marty: PlayStation is really a wonderful example of Sony positioning itself as a seamless entertainment company. Because PlayStation is a product that marries both hardware and software for Sony in a way that has not been done before. So the PlayStation is really a wonderful example of Sony as a total entertainment company.

And I believe this is just the beginning in terms of the entertainment experiences that Sony will develop for the consumer of the future. As far as new formats, there's going to be a tremendous amount of potential for DVD, and we think that the end user will also embrace that format; but at this point in time, PlayStation is a CD-driven game platform, and it's a platform dedicated only to gaming. And, again, that is the single most important communication message we can deliver to our customers, to our consumers: we are, we will be, and we will continue to focus on one thing — delivering the best possible gaming on the planet. And that's the key, and we're not going to take our eye off of that very very clear-pointed kind of focus. That's why we've been able to achieve what we've achieved in such a short period of time. It's all about the games.

NG: Critics of Sony and PlayStation have pointed to the turnover of senior staff at Sony Computer Entertainment. Steve Race, SCEA's first president, left just before launch, and then Olaf Olafsson — his superior — left shortly after. Is all this a sign that things aren't well within PlayStation HQ?

Marty: Just from a personal perspective, I've been with Sony for 11 years. Every company from time to time has turnover of staff. It's just a natural part of doing business.

Critics pointed to the seemingly constant turnover of senior staff at Sony Computer Entertainment of America as proof that PlayStation was a deeply troubled project

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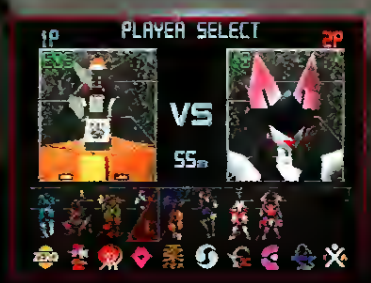

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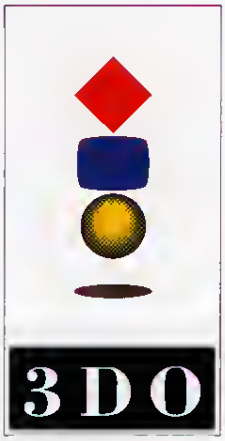
The 64-bit generation arrives (and so soon): Matsushita and Sega discuss the possibilities of M2; the arrival of Nintendo's Ultra 64; Howard Lincoln reaffirms Ultra 64's April 21 arrival date/**p.14** • **Senate hearings hand game makers a report card:** Senator Lieberman reviews his findings/**p. 17** • **Movers and Shakers:** Sega, Philips, and Topps make news •/**p. 19**

The most current reports from the front line of gaming

64-bit gaming edges closer to US stores

Matsushita and Sega negotiate an M2 deal while Nintendo sticks to Ultra 64 plans



Sources from 3DO report (despite denials from other industry insiders) that Sega and Matsushita are in discussions over M2

As Saturn, PlayStation, and 3DO fight the 32-bit battle, the 64-bit generation of game machines edge nearer US stores. Both Ultra 64 and Matsushita/3DO's M2 are scheduled to appear as game machines in 1996.

Regarding M2, Sega and Matsushita are understood to be collaborating on an M2-based 64-bit machine. According to the Japanese newspaper *Yomiuri Shimbun*, the two companies have been tinkering with Matsushita's M2 technology, which it licensed from Trip Hawkins' The 3DO Company late in 1995.

Prior to Matsushita's acquisition, rumors persisted that Sega was also interested in 3DO's M2 technology, either as an addition to its current supply of arcade hardware, or as a boost unit for Saturn. 3DO's long-term partner Matsushita eventually won the prize for a cool $100 million.

Yomiuri Shimbun reported that an M2-based gamebox had been delivered to Sega's headquarters in Tokyo for "feasibility studies." Not surprisingly, both Sega and Matsushita moved swiftly to make official denials of the story. A spokesperson for Sega in Japan said: "The report is completely groundless and has no basis in fact." In the US, a spokesperson for Matsushita told **NEXT Generation**: "To the best of my knowledge no discussions of that nature are going on. The indications we have are that this has come from Sega."

Nevertheless, sources at 3DO — which is still working on completing M2 in time for hardware and add-on launches later this year — insist that the story is correct and that Sega and Matsushita are working together. It will not be the first time. Matsushita already manufactures and sells a Saturn machine in Japan badged under its JVC brand. (It must be noted, however, that it would also not be the first time that a "factually challenged" rumor emanated from The 3DO Company's HQ in Redwood City, CA.)

It is well known, however, that Matshushita is looking for manufacturing partners for M2 machines in order to establish a viable 64-bit user-base that can compete effectively with Nintendo's Ultra 64. And it is difficult to believe that Sega would not take the opportunity to study Matshushita's plans and technology — even if it were just to find out what the competition is up to.

How any deal would work is open to speculation. It's possible that Sega is looking to manufacture a 64-bit machine which is backwardly compatible with its 32-bit Saturn, or to sell an upgrade to Saturn owners looking to take the 64-bit hike. This hypothesis is unlikely, however, due to a severe lack of compatibility between the two machines.

Another theory is that Sega's name will simply be badged on the machine while Matsushita will take care of the more expensive job of manufacturing. Sega would also set itself up as a senior provider of software — something which the firm

"Everyone knows that we are trying to get Ultra 64 [out] as quickly as possible. We're not playing games, we're trying to give the best estimate of what might happen. We're not trying to confuse anyone"

Howard Lincoln, Nintendo of America

32-bit war continues

The first indications of 1995's total hardware sales in the New Year put PlayStation ahead with Sony claiming sales of 800,000. Sega has yet to announce figures for Saturn, although it is expected to claim sales of around 500,000.

In a straw poll of retailers around the US, NEXT Generation found that PlayStation sales were averaging four-to-one against Saturn's. Although this news will encourage PlayStation owners and dismay Saturn owners, it hides a trend of growing popularity for Saturn. During October and November the ratio was anything from six-to-one to 12-to-one.

Evidently, the arrival of *Virtua Fighter 2* and *Sega Rally* has had a positive effect for Saturn and retailers are reporting healthier sales for Saturn.

But the dealers we spoke to were full of praise for PlayStation.

In Minnesota, a retailer said: "The PlayStation and everything connected with it have been the most exciting. But now a lot of people are coming into the store and saying that Saturn is better."

In Texas, one dealer said: "On hardware sales PlayStation rocked the house. I can't believe how many people came in and laid down $299 right away without even asking questions. It was never like this even with the Super NES and Genesis."

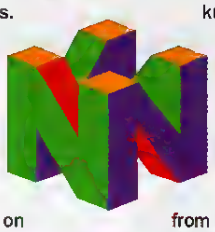
In Pennsylvania another store manager praised Saturn: "It's definitely coming back. There was a lull at the time of PlayStation's launch but *VF2* has made an impact. People ask which system is best, but there really isn't an answer. We have the best games running and let people decide based on what they like."

The 20%-finished *Kirby Bowl 64* shown at Shoshinkai said more about Nintendo's lack of finished software than it did about its own merits. *Mario 64*, however, looks ready to go

has hinted is part of its desired future.

Certainly Matsushita — despite its position as a world-leading manufacturer of consumer electronics products and owner of top names such as Panasonic and JVC — would benefit from being affiliated with a brand like Sega that's familiar to gamers.

Meanwhile, a



frustrated Nintendo has moved to drown widespread speculation that Ultra 64 won't be available in the US until September. This follows weeks of debate in the press on the viability of a spring launch, considering the early stages of development which software such as *Mario 64* has reached.

Nintendo of America's President Howard Lincoln, along with many seniors at Nintendo worldwide, has had enough of hearing that they will be unable to meet the promised spring launch date outside the home territory of Japan. They feel these rumors have been fueled by rivals to persuade gamers not to wait for Ultra 64.

Lincoln said: "As we indicated at Shoshinkai, our philosophy is to introduce on April 21 in Japan and we're shooting toward launch in the US and Europe at April's end, also."

He added: "Everyone knows we are trying to get U64 to all markets as quickly as possible. We're not playing games, we're trying to give the best estimate of what might happen. We're not trying to confuse anyone."

Many arrived back from Ultra 64's unveiling at Shoshinkai at the end of 1995 disappointed at the level of completion of the games. *Mario 64* — by far the most advanced of games and the only available to play — was only half finished. Many other games only appeared on nonplayable video. Games like *Kirby Ball* were only 20% done.

It is testament to Nintendo's perfectionism and the difficulty of producing 64-bit software that Ultra 64 may once again be held back by a lack of finalized software.

Nintendo of America officials have been quick to reject post-Shoshinkai speculation by many experts that it would be unable to meet its own April 21 launch schedule

Data stream

Estimated cost of looking after NASA's 150 retired chimpanzees in the manner to which they have become accustomed: **$100 million**

Number of expletives in Martin Scorsese's *Casino*. **553**

Number of copies of *Virtua Fighter 2* sold in its first weekend in Japan: **500,000**

Number of computers stolen every day in the US: **2,000**

US sales of general software applications in the last quarter of 1995: **$2.24 billion**

US sales of Windows applications: **$1.86 billion**

Percentage of parents worried that their children will access pornography over the Internet: **60%**

Percentage who hope having a PC will encourage their kids to watch less TV: **40%**

Number of employees fired by IBM in the past decade. **186,000**

Number of employees laid off by Digital Pictures in the past six weeks: **30**

Number of hydrogen atoms needed to cover the average comma: **2 million**

Average daily accesses to **NEXT Generation** *Online* in January: **1,800**

Maximum recommended length of a parallel interface cable: **15 feet**

Estimation by Sony Computer Entertainment of America's marketing team as to the age of US gamers: **17 years**

The number of full-time staff at NG: **12**

Average age of the **NEXT Generation** staff **27.1 years**

Average number of hours worked per week, per person at NG. **80 hours**

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One year later, is **Senator Lieberman** satisfied?

Or will the government see fit to impose its will on the video and computer game industry?

Do you or anybody you know pay any attention to the ratings guides on videogames? Senator Lieberman hopes so

If 1995 was the year of the 32-bit wars, then 1994 was the year of political intervention in the gaming world. The result was a "voluntary" adoption of video and computer game ratings. The deal being that if, after a year, the game industry wasn't able to put its own house on order, then the government would do it. No thank you very much.

So on December 13, 1995, one year after the Senate Hearings on Video Game Violence, Senator Joe Lieberman, D-Conn, and Senator Herb Kohl, D-WI (the co-Chairmen of the original hearings) held a press conference in the Capitol Building to discuss the progress of the videogame rating system, and to announce whether further government action would be necessary.

"We want to applaud these companies for taking a stand on the part of parents, and accepting some responsibility for the products they sell," the Senators wrote in a joint statement issued to the press.

"In [kids'] eyes, the words Sega and Santa might as well be interchangeable," said Lieberman, who expressed great dissatisfaction with Sega two years ago, during the Senate hearings because of the "excessive" violence in the Genesis version of *Mortal Kombat* and the "sexist nature" of *Night Trap*, a game that only played on the Sega CD.

Senators Kohl and Lieberman worked with the National PTA [Parents-Taachers Association] to grade the progress of the rating system and its participants. They gave the rating system an A for progress. According to Lieberman, the vast majority of videogames properly display the Entertainment Software Rating Board (ESRB) rating. The games currently on the market that haven't received ratings, said Lieberman, are generally older games (pre-1993) that were in stores before the ratings system was implemented.

The senators and the PTA gave videogame makers an A for cooperation. Lieberman said that the ESRB rating system, which rates things by maturity level is superior to the rating system implemented by the Interactive Digital Software Association (IDSA) for rating computer games. He said ESRB ratings such as A for Kids to Adults are slightly easier to understand the system of icons employed by the IDSA.

The senators called for a unified rating system and suggested following the ESRB model.

The senators were less impressed with computer game makers' implementation of their rating system. Stating that the level of participation among computer game publishers is lower than that of console game makers, the senators gave them a B– grade for their participation so far.

Retailers received only a C grade for their cooperation. While the senators were pleased that most of the videogames in the stores had ratings, they reported that retailers still carried many computer games without ratings and that many clerks and managers seemed unable to explain what the ratings mean. When the senators approached nine retailers asking them to commit to ban unrated computer games, none agreed. Since that time, Toys R Us has agreed to carry only games with ratings.

In an unscientific survey, the National PTA investigated retailer participation in upholding the rating system in several states. Reporting the results at the press conference, Mary Beth Gormley, Virginia State president of the PTA, said that the results confirm that there is more information about videogames available to parents today. She reminded the audience at the conference that "parents must be the final decision makers" when it comes to purchasing videogames, but at least they had better information for making those decisions. ng

***Night Trap* (top) and *Mortal Kombat* (above), the two games that provoked the ratings**

Saturn gains Sony support

Sony Interactive (formerly known as Psygnosis and part of the PlayStation empire) has confirmed that it will be publishing games for the rival Saturn system.

***WipeOut*, the first "Sony" game for the Saturn, is now at beta test stage and could launch within three months. Insiders say that it currently runs much slower than the Sony hit but that Psygnosis is confident that it will run at "speeds approximating the PlayStation."**

It's the first admission that a subsidiary of Sony will be publishing for Sega's rival platform. However, the company has not made an official announcement and it is understood that senior management are still negotiating final details of the deal.

That Sony should even contemplate this arrangement has shocked the gaming world. Opinions are divided as to Sony's motives: either Sony is confident that Saturn is already beaten and hence it need not fear "giving away" its killer apps, or there was more fine-print in Psygnosis' contract than Sony bothered to read at the time of purchase...

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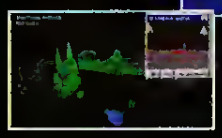

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movers & shakers

A monthly look at **business news** affecting the **gaming world**

by **Chris Sherman**

SEGA PULLS PLUG ON SEGA CD

NEWSLINE: Sega announced that it will no longer develop titles for its four-year-old CD-ROM-based unit, the Sega CD.

BOTTOMLINE: The company cited numerous reasons for dropping the unit that could easily have been dropped six months ago: 1) The need to concentrate its efforts on fewer platforms; 2) the slow and outdated rotational speed of the unit (single speed); 3) the $200 price tag that the Genesis and CD attachment carry.

Aside from Core's impressive *Thunderstrike*, most Sega CD games were Genesis ports with unnecessarily long intros. Unsurprisingly, the CD system has never sold particularly well.

CATAPULT IN SEGA SATURN DEAL

NEWSLINE: Catapult Entertainment appears to be close to signing a deal to provide Sega the technology for its Saturn Internet Connector, scheduled to ship in April for $150. Catapult has teamed with Sega Japan and Nissho Iwai Corp. to develop a modem for an online Saturn service in Japan.

BOTTOMLINE: Catapult officials offered an official "no comment" when questioned about the possibilities of a deal. With the rapidly waning 16-bit marketplace however, Catapult, the maker of the XBand modem, is finding itself with an audience that's either migrating to the PC or to next-generation platforms. This deal could likely put the modem and network provider in a better position to capitalize on its 16-bit experience.

Online gaming for the 32-bit platforms? Saturn is the first to sign up

CD-I EFFORTS TRIMMED

NEWSLINE: Philips Media is consolidating its Compact Disc Interactive (CD-I) activities in North America under its Washington DC group, including sales and marketing. As part of the move, Philips will withdraw all CD-I business from its Los Angeles office.

BOTTOMLINE: You and I knew it along time ago. CD-I is not going anywhere — at least in its current form. Now, Philips seems to have all but admitted it as well.

SANCTUARY WOODS TO ACQUIRE MORPHEUS

NEWSLINE: Sanctuary Woods Multimedia will acquire Morpheus Interactive development studio.

BOTTOMLINE: Strictly multimedia companies have found it increasingly harder to survive with increased competition. Some have broadened their business, focusing on the Internet in some cases and on videogames in others. Sanctuary/Morpheus will develop several next-generation, 3D action arcade-style titles in 1996. Morpheus has been developing a realtime 3D videogame engine, having tapped knowledge from former employees of Evans and Sutherland, a developer of military simulations. And of course, 3D "anything" is hot right now.

ATARI LOWERS JAGUAR TO $99

NEWSLINE: Atari Corp. has lowered the price of its Jaguar system to $99 — down from $149.

BOTTOMLINE: Hey, why buy a 16-bit system when you can own an Atari Jaguar for the same price? The number of decent titles available for the platform, for one thing. However, Atari promises that this will change (again). Twenty-three pieces of software were scheduled to ship for Christmas and until the end of the first quarter, 1996. Seventeen more are in development for release later in the year.

A PACK OF GUM, A BASEBALL CARD AND A CD-ROM

NEWSLINE: Trading card company The Topps Company, Inc. and Data Systems & Software Inc. (DSSI) will develop sports-related CD-ROM games.

BOTTOMLINE: This one could go either way. With a leading brand like Topps, the company could make a killing in the sports videogame market: the company has a brand and broad channels of distribution (think of all the places you can find Topps products). But, can they make games? ng

Christopher V. Sherman is the publisher of *MMWIRE*, the leading daily news service on the business of interactive entertainment. *MMWIRE ONLINE* can be found at HTTP://www.mmwire.com

Philips finally admits that its CD-I is dead (kinda). But a company that size of Philips won't stay out of the picture for long

Atari promises that the new $99 price for Jaguar is a bold new start, and not simply a last ditch close-out strategy

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Is online gaming for just $500 possible?

Bernard Yee has authored several books on gaming, and can be found regularly hanging out at various online gaming sites.

by Bernard Yee

Christmas has come and gone, and computers haven't gotten cheaper since I bought my first TRS-80 4 K Model I almost 20 years ago. That computer was $999, but with the expansion unit, 48 K and a 5 1/4" floppy drive that stored less than 100 K (but far better than the unreliable cassette recorder), the price was more then $2,000.

Computer dealers dream about the day they can provide adequate equipment to users under the magic $1,000 price point. Faster than you can say "open sesame" a whole new segment of the market is supposed to magically open up, they say. So why isn't everyone rushing to embrace Oracle's new $500 Network Computer (NC)? Oracle's plan is to create a $500 computer that will have minimal RAM, no hard-drive storage, and stand-alone processing power that's ready to jack into the Net. Oracle envisions that data could be stored on the server end for users, off-loading much of the data processing from the users' computers to the server side. In turn, necessary data would be downloaded to the network computer and run under a common programming interface, like Java (which even Microsoft has decided to support).

Oracle sees great markets in those corporations interested in reducing the high business costs of maintaining PCs when most people — according to Oracle — just use word processors and e-mail, and users, interested in the World Wide Web, who would snap up such a box.

What's the problem with a $500 Internet box? Think about the hardware — how are you going to cobble together even a 486DX2-66 class computer, local bus graphics card, 4 MBs of RAM and a video monitor for that sum? And Oracle neglects to mention that the number two reported use for a computer is gaming, which means it's probably the number one activity. Can anyone think about any time in computer history that we've actually taken a step backward in terms of processing power? Less storage? Less flexibility? The NC will be expandable to more memory and hard drives, but that costs about as much as a computer!

Call me crazy, but my guess is users want something they can use for many different purposes. Some Silicon Valley airhead executives babble about all the kids who want to play games on the Net, as if that were some technologically undemanding but popular pastime. They have it half right

Hey guys, you can keep a machine that doesn't have enough memory to run *Strike Commander*

— online games would be popular — but hey guys, you can keep a machine that doesn't have enough memory to run *Strike Commander*. Is there even a budget for 3D hardware acceleration in that $500? And a Network Computer will require ISDN at the very least. And don't forget about security — do you really want to keep all that sensitive data on someone else's computer?

This isn't to say that there aren't some excellent uses for an Oracle-type NC, like an ISDN videophone. Network Computers will be designed for LANs first, since the bandwidth to support them won't be widely installed in homes yet. But the price point has "consumer" written all over it. And a RISC-based NC means that it probably won't rely on an Intel CPU or a Microsoft operations system — excellent for competition. But, unlike some other pundits, I'm not quite ready to shovel the dirt on this idea. It has promise. Prototype boxes are coming soon, and when I play with one, you'll hear all about it.

Besides, despite my earlier skepticism about the online-friendliness of the game console platforms, many **NEXT Generation** readers might have the Internet box Oracle's been talking about in their homes already, in the form of the 32-bit game platforms like Sega Saturn or Sony Playstation.

Oracle cites the low price of these 32-bit RISC machines as evidence that it can make the $500 price point. The 32-bit consoles cost around $300, and a 28.8K bps modem is hovering above the unbelievably low $100 price point — a long way from the $300 300 bps Hayes modem in the days of my Apple IIe, before the $500 Novation AppleCat blazed along at an amazing 1200 bps. So at a price point around $500 without software, you could have an Internet machine.

How is this miracle possible? Well remember how Sony and Sega make their money (selling razor blades, not razors) off of software. So those crates of *Toshinden* and *Ridge Racer* being sold are subsidizing that Playstation. And your console is perilously close to that cable input — just waiting for two-way cable modems, running at a speed that makes ISDN look like my antiquated AppleCat.

A Network Computer won't have the same subsidization from game sales. There are still a few problems with using a console machine as a web browser — primarily, that dinky television we all have. Most web pages are created at a resolution of 640x480, or SVGA — there's not a television out there that can handle that resolution, and until we all win the lottery and run out to buy HDTV, there won't be. But stayed tuned...

Finally, you've probably heard about the Telecommunications Bill which could have a chilling effect on free speech on the Internet. Even if you're too young to vote, you can be heard on Votelink (http://www.votelink.com).

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Arcadia

News from the world of coin-op and arcade games

Marcus Webb is the editor-in-chief of *RePlay* magazine, the US' leading trade amusement magazine

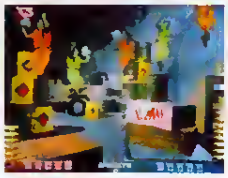
by **Marcus Webb**

Time Warner Interactive is for sale

The videogame company that launched an industry nearly a quarter-century ago is on the auction block, and insiders are questioning whether it will survive reasonably intact. Time Warner Interactive (TWI), formerly Atari Games, was put up for sale in mid-November 1995 by parent company Time Warner Inc. Ironically, the move came during the first time in nearly two years that TWI had a number one hit arcade game: *Area 51* claimed the top slot on the December 1995 edition of *RePlay Magazine*'s "Player's Choice" chart. The old Atari has been bought and sold many times during its 23-year history, but the question is whether it will remain an intact unit in its next incarnation.

Went to buy a software house? TWI is up for sale to the highest bidder

Leading candidates to make the purchase were thought to include Acclaim (which is getting into coin-op games this year anyway) and Electronic Arts (which dipped its toe into the coin-op pool last year, then got out). In any case, some potential buyers already have their own facilities and might just need one or two departments (R&D, manufacturing, whatever).



***Area 51* was TWI's first number one in years (and it wasn't a best seller)**

The *LA Times* said the sale will raise funds to pay $18 billion of the parent company's debt, adding: "Despite its library of hundreds of titles, [TWI] has been a disappointment in recent years and is thought to be losing money." It's true TWI had not produced a no.1 hit from in-house until lately.

However, some of TWI's problems may be due to internal politics beyond its control. Reliable sources say that the "fit" between the former Atari and the world's largest multimedia giant was problematic from day one. It seems every separate division of Time Warner (books, music, etc) wanted to set up its own little "interactive-media empire," and was therefore reluctant to turn over any power by farming out CD-ROM projects to TWI. Thus, the much trumpeted "synergy" which was supposed to result from cross-fertilizing all those intellectual properties, never happened.

Bill Gates' involvement in the gaming industry looks set to increase again

More home and arcade overlap?

Leading arcade owners and operators believe that networked videogames will be a big part of their future, but they're dreading the possibility that every game manufacturer may come out with a different (noncompatible) network system. But given the super-competitive nature of the game business, can such conflicts be avoided? Surprisingly, the answer is "maybe." Arcade super-operator Frank Seninsky, guru of the arcade industry's Joint Standardization Committees, said it's possible that some form of "universal home-arcade hardware" could emerge within years.

Two factors are spurring this possibility. First is the fact that "home video is stalling at a certain level of market penetration," Seninsky explained. "Home game manufacturers may decide they need to make common cause with the arcade market, in order to reach the rest of those consumers who will never be able to afford $250 home game systems or libraries of $60 game cartridges.

"It's no secret the home video industry had a terrible year last year," he added. "What many coin machine operators may not realize, is that the home video industry is bumping into a ceiling of sorts: 40% of all U.S. homes probably have a home videogame platform. However, the industry has been hovering around 40% for years, and it took them years to build up to that. To go higher than 40% penetration, the home video industry will require considerable effort, a major breakthrough.

"So I think it's likely that if the home video market wants to make the leap from 40% to, say, 80% penetration, it will need a tie-in with the arcade market which has the remaining 40% of game players (assuming 20% of the public will never play under any circumstances). That's where we arcade operators come in," Seninsky said. "Common home-arcade hardware platforms and joint cross-over promotions, etc., could lift the video industry into a new level of earnings. So yes, I believe you will see nearly identical platforms in the home and arcade markets. As a matter of fact, I think this development is inevitable and it will become a key segment of our industry."

The second big factor which could push a common home-arcade platform is that 800-pound gorilla named MicroSoft. Now that Bill Gates' outfit has secured desktop computer rights to practically every videogame under the sun, it's beginning to look for new markets and avenues and revenue streams. MicroSoft has always taken an open-market, common platform approach. And it usually gets what it wants.

Meantime, Seninsky warns that any "universal" platform will be constantly changing. "It will have to be changed and updated frequently, in order to keep up with rapidly advancing technology," he pointed out. "And don't forget, software requirements for the home and arcade markets are quite different. A coin-op game has to deliver the same thrill in 90 seconds to a few minutes, that a home game develops in 55 hours. This difference can be an obstacle to creating common hardware, or it can be a benefit to keep the two markets just "different enough" that each can succeed while basically working together."

Another Network test

Chicago-based game creator Incredible Technologies, Inc. ran a test of 24 networked versions of *Peter Jacobson's Golden Tee 3D Golf* in the Windy City region from Nov. 24 to Dec. 17, 1995. Rather than remote interactive gameplay, this network links all units to a central computer so scores can be compared for tournament play and prizes. Local players flocked to the games, which offered $1,000 to the winner, with smaller prizes offered to the best player in each location.

Generator

by **Mark James Ramshaw**

In anticipation of next month's feature on how to get a job in the game industry, here's some advice from the insiders

So you think working in the game industry must be a breeze? Well, think again. Nowadays development teams are big budget affairs, and consequently the demands placed on them are massive. Working for the likes of Shiny, Virgin, or Electronic Arts isn't about playing games day in, day out. To survive in the world of videogames, an ability to cope with stress is just the first qualification.

Antonio Ferrini of Graffiti, the Milan-based company recently responsible for Virgin's acclaimed 3D racer *Screamer*, says that pure passion is the way to get a foot in the door. "We get a lot of applicants — because it's seen as a 'sexy' job. Many people want to get in without really thinking hard about what the job involves, and what it takes to make it. Because the university courses don't really prepare you for the work market, we look more toward demos to find people with a lot of passion. It's a matter of finding those who don't just study computers, but go out and really get involved. Of all the people at Graffiti, only one of them is from a university. The rest are all here because of experience."

Bullfrog's Peter Molyneux has been working to bring fresh talent into the industry for several years now. He's published programming articles in magazines, launched competitions to secure new employees, and even sometimes takes on recruits and trains them from the ground up. So just how did Molyneux get into the industry?

"Through desperation! Several years ago I got in touch with a software company called Firebird and told them that I could program games. Of course I was bull-shitting, but they gave me *Druid 2* to convert to the Amiga. You're very unlikely to get that kind of break today," he admits.

"Getting into the industry is a much bigger problem these days. It used to be the case that you could send in an exciting demo and you'd get an interview. Now you have to send off much more ambitious stuff. Some people simply send game ideas in — but really that's unlikely to lead anywhere." So what advice can Molyneux offer all the hopefuls out there? "If you're going to send a demo, first make it as easy as possible to boot. The thing is a game idea can take a couple of hours to think of, but the execution can take a couple of years. What you have to do is to show creativity. Sometimes it's almost more useful to write in with a critical eye, saying something like 'I really liked *Magic Carpet 2*, but maybe you could have done this and this.' The thing is to keep your material as brief and as simple as possible — just a single page should get the essence of it across. It also means you aren't giving enough ideas for anybody to rip them off."

The academic route is one taken by about half of Bullfrog's staff. "For the qualifications route, a degree in maths, computing, science or philosophy is ideal. The last route, one which the other half the people here came to us by, is to visit for a week or two doing work experience." It's a good way to get a real insight into the other side of the industry, and as Peter says, "It's a good opportunity to impress people with your ideas."

Whichever route hopeful developers decide on, it's important to remember that this is a business like any other. The results may be more creative and the rewards great, but remember it's inevitably a lot more work than play.

Mark Ramshaw is a freelance game consultant and designer. E-mail him at markr@hoops.demon.co.uk

Datebook

February

The eighth **Networks Expo Boston** lands in the Hynes Veterans Memorial Convention Center, Boston, MA, February 13 to 15 and will present new software and hardware solutions for future Internet business, networking, and Web pages. Open to the public. Contact the Blenheim Group at 1 (801) 655-8024 for more information.

March

Intermedia World convenes on March 5 to 7, 1996. This show is open to the public and is set up to address the needs of developers, technologists, educators, and pros from the computer, entertainment, information, and communications industries. Call 1 (203) 840-5834.

The **ACME (American Coin Machine Exhibition)**, is the annual amusement and coin-op show sponsored by AAMA, held March 7 through 9, at the Orange County Convention Center, Orlando, Fla. For exhibitor, attendee, or accommodations information, please contact William T. Glasgow, Inc. at 1 (708) 333-9292. Not open to the public.

The 10th **Annual Computer Game Developers' Conference** will appear Sunday through Tuesday, March 30 to April 2, at the Westin Hotel, Santa Clara Convention Center, Silicon Valley, CA. New technology, industry big-wigs, tutorials, job fair, you name it, and it's there. This event is open to the public and three-day passes are available, but one-day passes aren't. For hotels call 1 (800) 944-9090; for registration, call 1 (214) 245-8874.

April

The first annual **I-Magic Awards Festival** will be held this April 17 through 18, at the New York Information Technology Center, NY, NY. This event provides achievement awards for excellence in consumer relevant categories. Contact Bonnie Harper at 1 (212) 431-8923.

WinHEC'96 (Microsoft Windows Hardware Engineering Conference) will appear on April 1 through 2 at the San Jose Convention Center and will feature discussions on new initiatives and standards, and look at the latest and hottest software, and more. Call 1 (612) 550-6390 for more information. Not open to the public.

May

Orlando Consumer Electronics Show '96 will occur from May 23 to 25 at the Orange County Convention Center, Orlando, Fla. Complete with electronics, games, and Internet gadgets, the Orlando CES (open to the public) should be attended. FAX: 1 (703) 907-7690.

The **Electronics Entertainment Expo**, the main event of the year, will appear at the LA Convention Center, Thursday through Saturday, May 16 to 18, and all the biggest game companies will be there! It's a must. For more information, please call 1 (415) 349-4300.

SHOW ORGANIZERS: If your show isn't listed here, it's because you haven't told us about it. Call 1 (415) 696-1688 Ext 143, or FAX 1 (415) 696-1678, or send details to DATEBOOK, **NEXT Generation**, 1350 Old Bayshore Highway, Suite 210, Burlingame, CA 94010.

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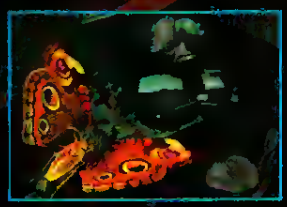

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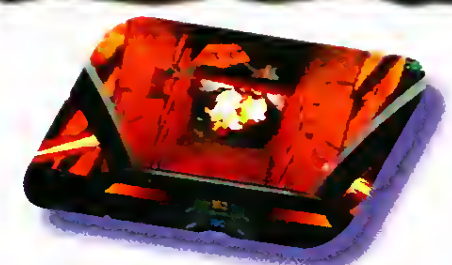

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When you try to speak to someone about videogames are you often met with a blank stare just as words like "mip-mapping" or "non-linear adventure" come out of your mouth? Fret no longer. **NEXT Generation**'s definitive guide to game terminology is here

A DEFINITIVE GUIDE TO GAMING TERMINOLOGY

Although some people use jargon to blanket their ignorance in discussion, to exclude outsiders, or even to be "on the cutting edge," the fact is that specialized industries and trades are constantly developing specialized language to describe new technologies and to speed up communication. It's much easier to say "there's a one-up loop on level 3 of *Sonic 2*" than to explain the concepts of one-up loop, level, and free guy over and over every time you want to discuss the subject. It's easier, however, only if the person you're talking with has the same background knowledge — a dangerous assumption. With the exploding popularity of the game industry, it's also risky to assume others know what you're talking about when speaking in videogame jargon. So what do you do when you need to speak about videogames in plain, clear English? Turn to us.

Whether you're discussing why full-motion video won't work to a studio producer, or you're explaining to a venture capitalist what the extra $100,000 for better SGI machines can do, speaking in plain English enables you to communicate effectively, where jargon will probably just leave them confused and irritated. The problem is, by the time you're reading NEXT Generation, you often can't remember the English equivalents for a lot of these words anymore. That's where we come in. From a list of about 600 initial videogame industry terms, we've identified 369 of the most important ones and defined them for you, in plain English. Read it. Chp it. Show it to your mom. Doubtless, a few of you will think some of the terms or people listed here are too obvious for definition, some will gape at the omission of a word they find critical, and others will take issue with the fine points of the odd definition. Whatever your reaction, our compilation is complete for 1996. We look forward to your letters.

Action-Adventure • A game which is nearly all action (see *action game*), but that also includes a good deal of strategy and more advanced problem solving. Often this is simply in the form of finding the correct series of buttons, levers, switches, etc. which can give the player access to new stages and levels (Shigeru Miyamoto's *Mario World* series), but can be much more complicated and include collecting special objects for later use (*Zelda 2*, *Soul Blazer*)

Action Game • A game characterized by simple action and response gameplay. This is the broadest category of games, there are many variants and sub-genres, and not many games fit neatly into just one. Under the most basic definition the player's on-screen character can run, jump, roll, shoot, or fly, but the defining characteristic is that enemies and obstacles are overcome by "physical" means, rather than involved intellectual problem solving. Examples include some of the earliest videogames (*Donkey Kong*), but the genre also includes more recent 3D efforts (*Jumping Flash!*)

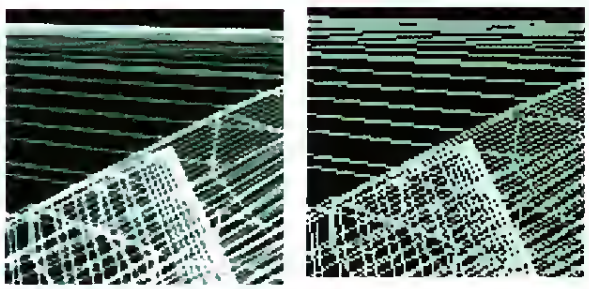
Affiliate Label • A company whose products are packaged and distributed (and sometimes manufactured), but not marketed, by a publisher who does not own the company is known as an "affiliate label" to the publisher

AI (Artificial Intelligence) • A set of computer instructions or algorithms designed to simulate the actions of an intelligent being

AL (Artificial Life) • In a nutshell, AL is the antithesis of AI. While AI seeks to simulate real-world behavior by following a complex series of rules, AL starts with very simple rules for a system and enables complex behavior to emerge from them. *Galapagos* from Anark is the first commercial game to use AL, but rumors abound that several AL-based RPGs are in the works

Algorithm • An algorithm is a group of instructions for performing a task or solving a problem, such as an algebraic formula or a program for a computer. Many 2D fighting games from the same companies have the same algorithms, except different graphics are used

Aliasing • A digital phenomenon. In the realm of graphics, when trying to display an image on a portion of the screen where the resolution is too low to display its details correctly, aliasing can occur. Edges look jagged instead of smooth, moiré patterns develop in fine parallel lines, and the image quality is degraded overall. The problem is most prevalent in diagonal lines



Anti-aliasing (left) works by blurring pixels at the edges of lines to make the image appear smooth. Contrast with the original image (right)

Alpha • The first playable version of a game. Alpha software generally barely runs and is missing major features like gameplay and complete levels. See also *beta*

Alpha Channel • The alpha channel is an extra 8-bits of information that's sent to the screen in the RGB color model (see *RGB*), it doesn't show up as red, green, or blue, but it has uses in numerous special effects. It is particularly useful in communicating transparency in objects. An alpha value of 100% would be totally opaque, 50% would be translucent, and 0% is completely transparent

Amiga • Started by R.J. Mical and David Needle, this company made add-ons for the Atari 2600 before creating a true multitasking computer, the Amiga, which was released by Commodore. The company was acquired by Commodore and the name can also generically refer to the computer, which was not successful in the US except in vertical markets

for video processing and editing

AMOA (Amusement and Music Operators Association) • A trade group representing companies and individuals involved in the coin-operated machine industry, from cigarette units to arcade videogames to redemption machines

Analog • A way of representing information (such as the position of a joystick or the height of a sound wave) that uses a continuous range of values. Contrast with *digital*

Anti-aliasing • A graphics procedure designed to eliminate a stair-stepping effect, known as jaggies, occurring at low resolutions. It works by blurring pixels at edges of lines to make the difference between two color areas less dramatic

Apple II • Pioneering home computer designed by Steve Wozniak and released by Apple Computer in 1977. Steve Jobs was influential in marketing the system and in building the Apple Corporation

Arakawa, Minoru
President of Nintendo of America

Arcade • A place where one can play coin-operation amusement machines, from videogames to pinball to redemption machines which dispense tickets that can be traded in for prizes

Arcade Conversion • An arcade facsimile found on home systems. These games are rarely straight conversions because, despite the claims of every home-system manufacturer, arcade systems are usually one or two steps beyond home systems in terms of resolution, speed, and graphic power

Arcade Game • A coin-operated videogame

Arcade Perfect • A term used to describe a flawless conversion of an arcade game to a home system

ASIC (Application Specific Integrated Circuit) • Simply, a custom chip dedicated to a single task, like processing graphics

Atari VCS/2600 • The first home videogame system to achieve major consumer success, the Atari VCS (Video Computer System), later renamed the 2600, sported an 1.19 MHz 6507 processor and 128 bytes of RAM. Games came on ROM cartridges. Graphically primitive to today's eyes, it was amazingly popular, creating an awesome boom and raking in hundreds of millions of dollars for Atari, a division of Warner Bros. Eventually, the market became super saturated with bad games and crashed between 1983 and 1984

Away Team • A group of marketers and producers at Sega of America who spearheaded the introduction of Saturn into the US Market (formerly known as the Tiger Team)

Bandwidth • A measurement of how many bits of information can be transmitted at a given time. It is generally used as a generic jargon term (e.g. "the Net doesn't have enough bandwidth to transmit video, dude") rather than as a technical term (e.g. "the bandwidth of X is Y")

Battery Back-up • In cartridges, a long-life battery is often used to preserve the contents of small RAM chips, for the purpose of saving one's place in a game after the system is turned off. Battery back-ups are used in PCs to save preference settings, clock times, etc.

Baud • Measurement of the data transmission speed of a telephone or network. At low speeds, the baud rate is equal to the number of bits transmitted per second, thus it is often used incorrectly as a synonym for bits per second (see *BPS*)

Beat-'em-up • See *Fighting Game*

Beta • Software nearing the release stage of development that still contains bugs or other problems. At the beta stage, software is stable enough to distribute to reviewers and to show to retailers: all the final play elements should be in place

Bit • **1)** Contraction of Binary digIT. The smallest discrete unit of information available to a computing device. Since all non-esoteric modern computing devices are binary, a bit is usually represented as a 1 or a 0, meaning on or off **2)** The bit is the basic measuring device for information in computing and videogames. It used to measure the computing power of systems, referring to how many bits the microprocessor or CPU of the system could process at once. An 8-bit system, like the original NES, works with 8-bit "words" and is less powerful than a 16-bit system, like the Genesis or Super NES, which can process 16-bit "words." This is confusing because often a system will have processors using differently sized bit "words." The NEC TurboGrafx had an 8-bit CPU but a 16-bit graphics chip. The Atari Jaguar uses 16- and 32-bit chips but has a 64-bit wide bus **3)** The color generation capability of a system is also measured in bits. Color on a computer screen is made up by combining different intensities of red, green, and blue in a pixel. The number of colors a system can generate is measured in bits. In general, the formula 2^X, where X is the number of bits, shows how many colors can be generated. Thus, 8-bit color is 256 colors, 4-bit color is 16 colors, and so on. Sometimes, with 16-bit and 32-bit color, some bits are used as check-bits or for generating alpha channels, and are unavailable for actual color generation

Bitmap • A 2D digital image. A bitmap exists in the computer's memory as an exact representation of the image. Strictly speaking, a bitmap refers to images that are bi-level (that is, each pixel in the image is either "off" or "on," as in black or white), but the term is commonly used in place of the correct term, "pixmap," to describe color digital images (similar to the way that "font," which means one typeface at a specific size, and style, has come to be synonymous with the term "typeface" which refers to every font of a given typeface). Every pixel in the image is stored (mapped) in memory at a specific location. ("Pixel 1, line 1 has a color value of X, pixel 2, line one has a color value of Y, etc."). Backgrounds and sprites are examples of bitmaps. Storing bitmaps takes a very large amount of computer memory

Blast Processing • A marketing term coined by Sega to promote *Sonic 2*. It referred to a then-new graphics routine which supposedly gave Genesis faster graphics processing

Blitter • A blitter is a device that enables a system to copy data directly from memory to the screen without going through a graphics processor. It is the fastest way to put an image on screen, but it's very crude — graphics can't be altered when they are "blittered"

Bomb-o'clock • A cry heard throughout Entertainment Alley when work is finished and it's time to play the videogame of choice of game developers everywhere. *Super Bomberman 2* for the Super NES, from Hudson Soft. The four-player game is insanely addictive

Bombaholic • One who is addicted to *Super Bomberman 2*

Bonus level • A level or stage in a game where the character cannot be hurt, but can gain special items, like free guys, power-ups, or extra points. Typically, bonus levels are either hidden and require discovery or appear after a certain number of regular levels have been completed

Boot, Boot Up • To start a computer system — the term was originally called IPL (initial program load), but later the word "boot" came as a shortening of the phrase "boot-strap process." During the boot, a computer checks set locations on a disk to be told the location of that system's operating system

Boss • Any larger, more powerful and more difficult to defeat enemy encountered in a game. A typical boss is a singular enemy fought only once, usually at or near the end of a level or stage (see *level, stage*), although in some games it may be encountered several times, but may be more powerful and difficult to defeat each time. If the same boss is encountered multiple times, it generally requires a different strategy to defeat each time

BPS • An acronym for bits per second. It is a technically accurate term for measuring the speed at which data can be transmitted over a telephone or network line

Bug • An unintentional flaw in a computer program. When encountered by the user it often generates unexpected or erroneous results. For example, a bug in EA's *NHL Hockey 95* prevents players with extremely good records for their hockey teams in the regular season from entering the playoffs

Bus • The pathway between devices (usually chips) on a circuit board. A bus is measured in width, by bit. A wide bus carries more bits of information and is thus faster than a narrower bus

Bushnell, Nolan • Creator of *Pong*, founder of Atari and Chuck E. Cheese. He is regarded as the godfather of videogames, even if he didn't actually invent them

Byte • The standard size "word" used in computer memory. It is comprised of eight bits

Cache • Special RAM (sometimes built into the processor) in which frequently accessed pieces of information can be stored to avoid having to search the entire memory for them. Caches can greatly speed the execution of a program

Cache Coherent Memory • Systems which have more than one processor (like Sega Saturn) often have more than one cache. Cache coherent memory means that the processor will check both its own, and any other processors' caches, when writing to or reading from memory, to make sure it is always writing to or reading from the most up-to-date memory, whether that's in another processors' cache or general memory

Cartridge • A small device, containing chips, designed to be inserted into a computer or system. It contains either ROM chips with program information or RAM chips (generally for saving information). Before the advent of CD-ROMs, most videogames for home systems used to come on cartridges (also called "carts")

CD-i • A CD-ROM standard designed by Philips that could only be played in its proprietary CD-i consoles. Marketed as a high-end multimedia machine, it was slaughtered in the marketplace by cheap multimedia PCs. A last ditch attempt in 1994 to emphasize the gameplaying aspects of the system failed as well

CD-Recordable • A CD which can be written to by using a special hardware device. In actual CDs, pits carved into the surface of the CD are read by the laser in the CD-ROM drive. CD-Recordables, or CD-Rs, simulate the pits by putting ink spots on the CD. CD-Rs are generally gold in color, not silver or black

CD-ROM • A compact disc, similar to an audio CD, containing information that can be read by a computer or console. Since CDs can only be written to once (using special equipment), they are functionally read-only in nature, hence the suffix ROM (see *ROM*). CD-ROMS can hold about 650 megabytes (650 million bytes), far more than a magnetic disk or cartridge, allowing them to store memory intensive data, like video. Reading from a CD-ROM is far slower than reading from a cartridge or magnetic disk

CD-X • Compact Sega Genesis/Sega CD combo that sold at $399. It barely made it into production. If you've got one, it's a collector's item

CES • Consumer Electronics Show. A huge trade show for consumer electronics, like stereos and TVs. Until E³, it was also the premier tradeshow for video and computer games. Although some companies still have a presence at CES, its influence is greatly on the wane

Chance • Used for "life" in many Disney games, since Disney prefers not to insinuate that its cute characters could die. See *life*

CGA (Color Graphics Architecture) • A graphics standard designed for the XT machines. CGA cards were capable of displaying graphics at 320x200 and 4 colors — black, white, magenta, and cyan. Even for the time (early 1980s), these graphics were terrible, paling in comparison to other color machines available on the market

Cheats • Codes or tricks that are programmed into a game which give the player special abilities, like invulnerability or extra weapons. Cheats are often programmed into games to facilitate easy testing, and left in to add depth. Many magazines print cheats for games that they have discovered

Chip • A generic term for a semiconducting integrated circuit. Chips are generally nearly flat black quadrangles a few millimeters thick. They are far faster than using transistors or vacuum tubes (to put it mildly)

Cinepack • Compression standard for video, developed by Apple. It provides excellent compression and good video quality. It is an asynchronous compression process — it takes orders of magnitude longer to compress video than to play it back

CISC • Complex Instruction Set Computer. The traditional architecture of a computer processor, it accepts instructions which it then interprets. CISC chips can process more complex instructions than RISC chips, which makes them easier to program for, but they deliver slower performance even at comparable speeds. Thus, a 20 MHz CISC chip will, all things being equal, be slower than a 20 MHz RISC chip. The Motorola 680X0 and Intel X86 and Pentium chips are examples of CISC chips. Contrast with *RISC*

Classic • In game terms, a classic game is an old game that still has excellent replay value, like *Pac-Man*. More generically, it is used to describe consoles and software from before the crash of '83-'84, like the Atari 2600 and Intellivision and games like *Combat*, *Target Fun*, and *Ninja Golf* — whether or not they were actually classic in the fun-to-play sense

Claymation • A form of stop-motion animation that uses easily malleable characters. Examples include Gumby, the California Raisin ads, and *Clayfighter* from Interplay

Clipping • A process that occurs in 3D graphics. If an object in 3D space cannot be viewed, it is not drawn by the computer. If it can be seen, it is drawn. If only part of the object can be seen, it is "clipped" and the visible portions are drawn. Computing the portions which are visible takes many more processor cycles than simply drawing an object or not drawing it. Sloppy programming can result in improper clipping, so that when the view is very close to the edge of an object, it may not be drawn when it is supposed to be

Clock Speed • The speed at which a computer chip operates, usually measured in Megahertz (MHz)

CLUT • Color Look Up Table. See *color palette*

Coaster • A CD-ROM which is so terrible that it has more functionality as a coaster for drinks than it does when inserted into a computer or game system

Code • **1)** A series of key clicks or button presses in a game that can activate a cheat. See *cheat* **2)** The program instructions that run a computer or console. See *source code*

Coin-op • Any coin-operated machine. Usually refers to a coin-operated arcade videogame

Coleco • A videogame pioneer, Coleco designed the first digital home videogame system in 1976, the TelStar arcade, which could only play one type of game, *Pong*. A cartridge-based system, the ColecoVision, followed in 1982. The ADAM computer (1984) was released just as the home computer and videogame industries crashed simultaneously. Coleco is actually an acronym for COnnecticut LEather COmpany

ColecoVision • A cartridge system introduced by Coleco in 1982. It was far more powerful than the other systems available at the time (the Intellivision and Atari 2600). Although it sold more than 500,000 units in two years, it didn't have the installed base to survive the crash of '83-'84 and was discontinued in '84

Color Palette • Can refer to two things. The color palette may be the total number of colors a system is capable of generating, even if they cannot all be displayed at once (the Genesis can display 64 colors from a palette of 65,000), or it may refer to the (64, say) colors that are being used on-screen at that time, in which case it would more correctly be referred to as a CLUT. Since 32-bit systems can generally display thousands or millions of colors simultaneously, discussion of color palettes is rapidly becoming archaic. Creating custom, well designed CLUTs is still a factor on PCs which can display only 256 colors, however.

Combo • In a fighting game, a "combo" is a combination of moves executed in rapid sequence, often following so closely together that the opponent has no time to respond. In some recent games (*Killer Instinct* being the first) combos can do more damage to the other character than the sum of the damage inflicted by the individual moves. Some moves are only available during or after combos

COMDEX • A massive PC industry trade show at which many PC game companies have displays and provide demonstrations

Commodore C64 • Classic 64 K computer introduced by Commodore in 1982. It had a cartridge slot and was originally intended to be used with a cassette tape as the storage mechanism. It was very inexpensive, but displayed only 40 characters across the screen at a time, could not display lower case, and was functionally unexpandable. It had better graphic abilities than a stock Apple II (but not an Apple IIe or IIc with 128 K of memory). Arguments about whether the Commodore 64 is a better computer than the Apple II still rage among certain members of the (geek) population, years after both systems have passed into obscurity. People without emo-

tional attachments to their computers, though, quickly realize the superiority of the Apple II. (Discussion of this topic is forbidden at the NEXT Generation offices, so please don't send letters questioning this definition or its conclusions)

Compilation • A collection of old games, presented as a single package. Compilations of classic games are becoming more popular with companies who want to cash in on past hits. Williams, Namco, Activision, Atari and others are releasing versions of classic games which run on modern systems

Compiler • A piece of software that converts source code written in a high-level language (such as C) to object code (typically Assembly language) that a microprocessor can run. Also can be used as a noun, compile — to refer to the object code itself

Console • A computer which is dedicated to playing videogames and which generally has a very limited input mechanism (a joypad). Examples include 3DO, Sega Genesis, and Sony PlayStation

Continue • In arcades, when a game is over, one is often presented with the opportunity to continue where one died (instead of starting over at the beginning of the game) by inserting another quarter or token. Most home games also have the continue option, but have a limit of some set number of continues to prevent one from finishing the game the first time it is played

Conversion • A game originally written for one platform (Super NES, for instance) that's translated to work on another platform (like Genesis); also called a port

Copy Protection • Special code in a program that prevents a disk from being copied using conventional measures. Copy protection may also require a "key disk" to be inserted every time a game is played, or information to be retrieved from the manual (such as a series of numbers) every time the program is started. Designed to foil piracy, copy protection is such a hassle for end users that few programs employ it. The fact that most games now ship on CD, which makes them more difficult to copy, is about as strong as copy protection gets in the industry today

Counterfeit • Bootleg software presented as the legitimate article. The counterfeit software trade costs the industry billions of dollars a year worldwide, although it's a problem more in countries with less stringent intellectual property laws, like Hong Kong, India, and South America than in the US

CPU (Central processing unit) • The "brain" of a computer (including a game system). It accepts instructions from a program, executes them via the ALU (arithmetic logic unit) and generates an output. While graphics output is generated by the CPUs in most PCs, many game systems use dedicated graphics co-processors to speed the generation of complex graphics, like 3D polygon spaces

Crawford, Chris • Founder of the annual Computer Game Developers' Conference in Santa Clara

Culling • A way of rasterizing convex objects, culling tells the rasterizer not to bother drawing polygons on the back of convex objects, like spheres, that will be hidden from view

Cut-Scene • An intermission during gameplay in a game. cut-scenes usually feature animation, information about the next level, or full-motion video. In the cartridge days, when space was at a premium, cut-scenes which contained lots to see and hear were very popular, because they were very rare. With the surfeit of storage space that CDs provide, they have become almost obligatory; usually a tedious video must be endured or if possible, aborted by pressing a button on the joypad

Dataglove • A control unit that fits on the hand and enables the user to use hand motion to control on-screen actions. Perhaps the most famous example is Mattel's Power Glove for the original NES

Data Path • The physical path that bits (in the form of electrons) travel between components on a circuit board. Measured in bit-width (i.e. a 64-bit data path)

Depth Shading • Also known as distance shading, fog shading, or depth cueing. To prevent a processor from having to render objects in a 3D environment out to infinity, which would cause monumental slowdown, many games employ depth shading. After a certain arbitrary distance, every object is considered to be out of the view volume and is not rendered. To compensate for objects suddenly popping into view, objects at the far edges of the view volume are shaded to appear as though they are coming out of a fog

Debabelizer • A software package that, at its most basic, converts graphics files from one format to another. It also enables a user to dither images to different resolutions or color depths, enables for batch processing, and more. Debabelizer is used on almost every single piece of game software

Delayed • Software which has missed its ship date

Deluxe • In arcades, a deluxe unit is one that goes beyond the standard stand-up construct. It may feature a sit-down format or active response (i.e. it shakes). Namco's *Alpine Racer*, which you stand on like a pair of skis, is perhaps the ultimate deluxe game

Design Document • The complete "script" for a game, it contains (or should contain) every piece of information needed by programmers and artists to create a game

Designer • The designer is the person who specs out the game, coming up with the plot, the format, the puzzles, and the goals. She or he does not (necessarily) program the game or create the artwork

Developer • Refers to the company that actually creates the game versus the company that publishes it (duplicating the discs, printing the boxes, working out distribution, etc). Often, the developer is given a brief initial specification sheet by the publisher

Development Studio • A developer wholly owned by a publisher, but that operates at least semi-autonomously. An example would be Origin, which is wholly owned by Electronic Arts, but which operates largely as its own entity

Digital • A way of representing information (such as the height of a sound wave or the color of a pixel) that uses a number of discrete values. A sine wave would be analog, a digital representation of a sine wave would be made of tiny stair steps

Digitize • To convert a photograph or video image, etc. from analog form into digital form

Director • The premier multimedia authoring tool, *Director* makes creating very standard looking and acting multimedia presentations fairly easy

Distributor • A company that handles the allocation of software packages to retail outlets. Many companies act as their own distributors, whereas many choose to employ a third party

Dither • A process which enables a system to create the illusion of displaying more colors than it can actually generate, dithering is accomplished by placing dots of different colors next to each other in a variety of patterns. For instance, placing red and yellow dots next to each other in a checkerboard pattern will create an impression of the color orange

***Doom*-like** • A game with a similar first-person perspective to Id's landmark game *Doom*, which also generally liberally copies its gameplay, which consists largely of running around mazes, looking for hidden doors, and killing things

DOS (Disk Operating System) • DOS has come to be a casual term for the MS-DOS operating system that runs IBM-PC compatibles

DRAM (Dynamic RAM) • DRAM refers to the standard RAM in a computing device, as opposed to video RAM (VRAM) or other types of RAM which may be present

Draw In • In a 3D game, whole objects sometimes suddenly "pop" into the view volume. This is draw-in. It occurs because of either sloppy programming of clipping areas, or a lack of processor power, which causes the system to not render objects until they are very close and important in the game

Drop Out • When too many polygons are being displayed on screen for the computer to continue to update the display at a constant rate, some of the polygons may "drop out" and disappear. This effect can be very disconcerting

DVD (Digital Video Disc) • A new standard for optical discs. DVD is the next step beyond CD. It promises up to 10 times the storage capability of current CD-ROMs

Dynamic Play Adjustment • An AI routine, pioneered by Sega,

that adjusts the difficulty of the game on the fly to the user's skill level

Easter Egg • A small item, usually an inside joke, hidden in a program which is accessed by performing a certain sequence of commands. The first easter egg was found in the Atari 2600 game *Adventure*. By following a special sequence of commands, the character could pass through a wall into a hidden room that contained the programmer's initials. Easter eggs are present in almost every program, from *QuarkXPress* to Microsoft Windows

ECTS (European Computer Trade Show) • The European equivalent of E³. ECTS is held in London every March and September

EGA (Extended Graphics Architecture) • A replacement for the CGA standard for PC video display, EGA detailed cards displayed a standard 320x200 resolution at 16 colors. EGA was also capable of several higher-res modes that were very rarely used in gaming

EISA (Enhanced Industry Standard Architecture) • Invented by a group of electronic manufacturers to answer the proprietary Microchannel architecture released by IBM. Defined as a 32-bit bus, and a way that machines could look at what cards were in the system, and what resources those cards need. This ability to look at the card's resource requirements was one of the big factors in developing a plug-and-play operating system

8-bit • **1)** The processing power of a chip or system. Refers to how many bits of information can be handled by the processor at once. Can also refer to the width of a bus or data path **2)** A way of describing graphics power. Eight-bit color is 256 colors. See also *bit*

Emulation • A mode which enables a computer to simulate the operation of another computer. The universal computing nature of modern computers means that any computer (given enough time and storage space) can emulate any other computer. In game terms, many classic games are being released for next generation systems in emulated form. That is, instead of rewriting a game for PlayStation, you simply write an emulator of the original computer or arcade board for the PlayStation and let the emulator run the original code. For classic games, this is considered preferable than rewrites of the games, since some of the most warmly remembered "features" of classic games were actually bugs

Encryption • To prevent unauthorized use, many consoles require that their cartridges or CDs have specially encrypted code on them before they will work in the console. This encryption can only be placed by the console manufacturer, which allows them some measure of control over who produces games for the system. Most encryption routines can be bypassed, some more easily than others. The PlayStation, notably, has an almost criminally easy way to bypass encryption

Engine • A collection of software routines that perform a specific task

Entertainment Alley • Coined after Silicon Valley and Multimedia Gulch, Entertainment Alley refers to a strip on US route 101 that runs from Redwood City to Brisbane, CA and off of which are located the greatest density of game developers in the country. Sega, 3DO, EA, Digital Pictures, Domark, Capcom, Sony, SGI, *Game Players* magazine, *PC Gamer* magazine, and *NEXT Generation* are just of few of the game industry-related concerns located in the Alley, where lunches at hip spots may resemble mini-trade shows, or more commonly, cold war-era Berlin, with people looking over their shoulders before exchanging hot gossip

EPROM (Eraseable Programmable ROM) • A ROM chip that can have its contents overwritten with a special hardware accessory

E³ • Electronic Entertainment Expo. A computer entertainment and videogame trade show held annually in May in LA, CA

Famicom • Short for FAMIly COMputer, the Famicom is the Japanese name for the Nintendo Entertainment System (NES)

Fatality • A special move that can be executed in some fighting games, notably the *Mortal Kombat* series, after a match is over, which results in (usually) the graphic death of the losing character. Variations include Animalities (where the character turns into an animal before killing its opponent), Babalities, where the loser turns into a baby, and "friendship" moves, where the character does something goofy, like signs an autograph for the loser

Field • The image on a TV screen is drawn in two parts. First, the odd lines (across) are drawn, then the even lines are drawn (see *interlace*). Together these two images are known as a frame. A field is one half a frame, one scan pass of the electron gun that draws the image on the TV screen

5200 • A classic system released by Atari as a follow-up to the 2600 in 1983. In addition to a pause button, better graphics and sound than the 2600, it sported joysticks which did not center themselves when released, rendering many games nearly unplayable

Fighting Game • A game which consists of one-on-one duels between two characters, one controlled by the player, the other controlled by either another player or the computer. The fighting may be executed hand-to hand, but characters may also use weapons, or have supernatural powers such as the ability to throw fireballs. See also *2D fighting game*, *3D fighting game*

Final Fight Game • A sub-genre of the side-scrolling game, this type of game, named for Capcom's *Final Fight* is a side-scrolling game that involves hand-to-hand fighting. Unlike a true fighting game, however, you are generally restricted to two or three moves like punch or kick, so these games require less skill than true fighting games, with button-pushing speed being the main factor in success. Often the game itself will cause your character to do special moves, without any effort on your part. Despite its title, the first *Final Fight* game is generally acknowledged to be *Double Dragon*

First party • The manufacturer of a hardware system. The term is used to describe the origin of software for a given system. First party software comes from the manufacturer. For instance, Nintendo is the first party publisher for the Super NES and Ultra 64. See also *second party* and *third party*

First Person • A perspective in which a player's character is not represented on the screen, but rather the view is such that the player "sees" what he or she would if they were actually performing the actions found in the game (looking through the window of a cockpit, for example). See also *third person*, *simulation*

Flicker • Mainly a problem of 16-bit systems. When too many sprites appear on-screen at once they would begin to flicker and lines of sprite graphics would disappear from the screen. This was the 16-bit version of the polygon glitch

Flight Sim • A simulation which attempts to duplicate as closely as possible the experience of flying an airborne craft. The game may be based on a real craft (*Falcon 3.0*, *Apache*), or an imaginary one (the *Wing Commander* series), but the game must be designed with an emphasis on realism and include as much detail as technically possible

Flight Yoke • a hardware input device that is a facsimile of the flight yoke used on airplanes, it is used by some people to provide maximum realism in flight simulators. Flight Yokes are generally analog devices

FMV (Full-motion video) • Having FMV cut-scenes in games has gained vogue since the rise of high capacity CDs as storage devices, and many games based entirely on FMV have been released. How much FMV cut-scenes add to a game is still a very open question and few entirely FMV-based games have risen above mediocre. The quality of FMV in games is generally below that of TV or VHS video

Forward Scrolling • A perspective in which objects in the background scale out "toward" the player, typified by games like *Space Harrier*, *Burning Force*, and *Afterburner*. This differs from first-person, 3D games by the fact that the perspective is simulated by scaling 2D sprites

Frame • Made of two scan fields (see *field*, *interlace*) it is the "complete" image that appears on a TV screen

Frames Per Second • A measure of how many frames are drawn per second on a screen. In standard US NTSC TV broadcasts, 30 frames (and 60 fields) are drawn on the TV screen per second. The more frames drawn per second, the greater the realism of the motion shown on the screen

Many games draw less than 30 frames per second to the screen. The TV image is still refreshed at a rate of 30 FPS, but a new image simply isn't drawn with each new pass

Free Guy • In a game, when you get an extra life, either by reaching a certain number of points or finding a one-up icon, it is often referred to as a free guy (see also *life*)

Game Boy • A portable game system by Nintendo introduced in November 1989. Games come on cartridges. It has a monochrome LCD screen which can display 16 shades of gray. Thanks largely to the pack-in game, *Tetris*, the Game Boy was a major success, despite being the most technically inferior hand-held on the market today. It is powered by a 1 MHz processor

Game Gear • Eight-bit portable game system introduced by Sega in April 1991. Although the cartridges are different sizes, it is compatible with the Sega Master System. It has a 32-color LCD screen, and is powered by a 3.5 MHz Z80 CPU

Game Over • Message which appears on screen when a game is over. Also, a book on the history of Nintendo, by David Sheff

Gameplay • The key element in any game, the gameplay is in fact the game itself: the act of bouncing the dot which represents the ball off the line that represents the paddle (as in *Pong*); the way one moves the plumber around, jumping on heads when rescuing the princess (as in *Super Mario Bros.*), etc. The art and sounds in a game are merely dressing for the gameplay

Garriott, Richard • Founder of Origin Systems & Director of Development, Electronic Arts

Gates, Bill • Head of Microsoft, and richest man in the world

Genesis • 16-bit console introduced by Sega in August 1989. It took about a year before it caught on, but it managed to wrest control of the videogame market from Nintendo by 1991. It has a 7.8 MHz Motorola 68000 processor (the same one used in the original Macintosh — a Mac OS Genesis cart was once produced at a Mac Hack conference as a technical demonstration), 64 Kilobytes of RAM, and can display 64 colors at once

Genre • A game category that can be generally described as having similar styles of gameplay and goals, like fighting, driving, shooting, action, puzzle, etc. Many games fit into one genre or another, and many are hybrids

Genre Fatigue • What happens when you play one too many games in which you run from left to right, jumping from platform to platform, shooting bad guys (or jumping on their heads) in your quest to fight yet another boss "digitized from actual movie footage"

Glitch • Synonym for bug. In the next generation, it often is used in the phrase "polygon glitch" to refer generically to drop-out and draw-in

God Game • a sub-genre of strategy games in which you run a civilization or small tribe, often with the tribe represented by tiny, on-screen animated people. The prototypical god game is *Populous*, although the definition has been stretched to include titles like *Sim City*. Usually the perspective is isometric or overhead

Gold Disc • The final beta of a CD-ROM game is called a "gold disc" in reference to the color of recordable CD-ROMs, which are gold, not silver

Gouraud Shading • Also known as smooth shading, this is a method of shading polygons. In Gouraud shading, colors are first calculated at each of the vertices in a polygon. Then the surface of the polygon is shaded to give a smooth transition between the different colors at each vertex

GPU (Graphics Processing Unit) • A special processor dedicated to graphics, it enables low cost systems to process graphics, particularly 3D graphics, that would be impossible using a general purpose CPU

Graphics • Simply put, anything that is not text that appears on a computer or TV screen. Often, a distinction is made between the art quality in a game and the representation of that art on-screen, the graphics

Graphics Accelerator • A daughterboard or add-on chip that enables a computer to off-load any graphics- oriented instruction to a separate processor. By including tricks and cheats that help draw certain objects and shapes faster, in addition to freeing up valuable CPU cycles, these boards can improve graphics-intensive software (like games) performance by leaps and bounds

Graphic Adventure • An adventure game which has graphics in addition to (or completely in place of) text. Due to limitations in storage technology, graphic adventures are necessarily more limited than text adventures, unless the graphics are used purely as illustration for a text adventure. They can range from totally text-free games like *MYST*, which simply involves pointing and clicking with a mouse, to games like *Mission Critical*, which contains almost as much depth as a text adventure

Green Book • A CD standard named for the color of the cover of the book that described it. Green book CDs are CD-i compatible

Guy • See *life*

Hawkins, Trip • President and CEO, The 3DO Company. He was also the founder of Electronic Arts, the biggest third party game publisher in the US

Head Tracker • A motion tracker specifically designed to follow the movement of a user's head. Found in many HMDs

HDTV • A new high-resolution TV standard that will more than double the current resolution of TVs. HDTV uses a digital rather than analog transmission standard. An onslaught of technical problems have prevented its acceptance as of yet, but it is, allegedly, coming

Hidden Level • A secret level in a game that requires the user to discover it, usually by performing a special action, such as going down a pipe or smashing through a wall. Sometimes hidden levels are only revealed when a certain goal has been reached — winning every race in a game may reveal a new track, for instance

High-Res • An image or game that has a high resolution. See *resolution*

HMD (Head-Mounted Display) • Used in virtual reality, an HMD is used to provide an immersive experience. Generally, they are goggle-like instruments that have two small screens in them, one for each eye. By offsetting the image displayed in each, a computer can generate stereo images. Many HMDs feature head-tracking abilities. See also *head tracking*

Hollywood Angle • A tragic offspring of the marriage of Hollywood and Silicon Valley is the "Hollywood angle." This is when developers, usually based in Hollywood and with Hollywood ideas of what is and is not good entertainment, set out to make a game that is more like a movie than a game. They are invariably about as interesting as watching home movies developed by game designers (that is, not at all), generally lack all but the most rudimentary interaction, and have no real gameplay to speak of. See also *FMV*

Homlish, Marty • President of Sony Computer Entertainment of America

Ice level • A level in a side-scrolling game in which the platforms the character moves on are covered in virtual ice, making the character slide around when he or she tries to stop. Along with mine-cart levels, the ice-level is the most overused gag in the side-scrolling world

Icon • A small, abstract graphic representation of an object (a free life or power-up, perhaps). Generally, a game character needs to touch an icon to gain its power

IDSA (Interactive Digital Software Association) • A computer game industry trade group

ILM (Industrial Light and Magic) • Special effects studio owned by entertainment guru George Lucas, ILM creates the best special effects in the known universe. Few software products, even those from LucasArts, can afford ILM-genereted special effects

Immersive • Industry buzzword. "So immersive that you forget the real world," is the goal that every game shoots for these days, and every press release touts

Infocom • A landmark game developer in the early '80s, Infocom developed text adventures, notably the *Zork* series. Its games were noted for having more depth than any other adventure games, before or since. It was acquired by Activision in 1988. Activision has since revived the brand name with a series of good, if not groundbreaking,

graphic adventures

Information Superhighway • Media concept that weaves together a nebulous mixture of the Internet, video-on-demand, future services from set-top boxes, and a global "do everything" network, on which, of course, you'll also be able to play games. Since most video-and-game-on-demand trials have been massive failures, don't hold your breath

Intellivision • Classic console introduced by Mattel in 1982 that had greater graphics power than the dominant Atari 2600. It was slower than the 2600 and had less software available, but it was known for its superior sports titles

Interactive Movie • A game that purports to contain the best elements of a movie and a game — the video and plot of a good movie combined with the interaction of a good game. Few if any have succeeded. Because it would be impossible to film footage of every possible character movement in an environment (which can be represented easily with sprites or polygon-based characters), control is extremely limited. Also, many interactive movies are designed by people utterly unfamiliar with what makes a good game. See also *Hollywood Angle, FMV*

Interface • Anywhere the user interacts with the software is interface. This includes everything from select screens to character control. The term interface, though, is generally used as a noun to describe the part of the software designed with user interaction involved. Thus, if you must go through 20 select scenes before you start playing the game, you can say the game has a poor interface

Interlacing • Because the electron guns that draw pictures on TV screens were initially too slow to draw the screen in one pass — the first lines at the top of the screen would be fading by the time the last lines were drawn — pictures on TVs are drawn using what is known as interlacing. First, the odd lines down are drawn (line 1, 3, 5, etc), then the even lines down are drawn (line 2, 4, 6, etc). The image shown by one pass is known as a field, and the complete image drawn by two passes is known as a frame. Standard TV broadcasts run at 30 frames per second. In an effort to boost hype for a product, sometimes ads or press releases will state that their games are "60 fields per second," instead of 30 frames per second. Most computer monitors are noninterlaced, and many arcade screens are noninterlaced as well (one of the reasons arcade screens always seem to look sharper than TV screens, other than their often higher resolution)

Conventional, point sampled image is blocky (above). Bilinearly interpolated image (top) is smooth when viewed at the same magnification

Internet • A loosely knit, global computer network initially developed by the US government to exchange information between academia and the military. The looseness and interconnectivity is intentional, designed to provide a noncentralized communications network that could function in the event of a nuclear war. Today, the main things available to consumers on the Internet are newsgroups — vast bulletin boards; document-and-file retrieval databases; chat areas; online gaming sites; and World Wide Web sites

Interpolation • Generically, it determines from two or more values what the "in-between" values should be. Gamers will be more concerned with graphic interpolation, particularly the "bilinear" interpolation of texture maps, which reduces the blocky *Doom* effect. For instance, when one approaches a wall in *Doom*, the texture maps scale up to such a degree that a single texel is often spread over many pixels, causing the wall to look extremely blocky and destroying the realism of the scene. Bilinear interpolation (so called because it works in two dimensions, x and y) lessens this effect by looking — for each pixel — at the texel which should be drawn to it, but also at the three other nearest texels. It then interpolates this texel data to determine a color for the pixel, so that two adjacent pixels, which would have had the same color if the texture map was point-sampled, will likely have different colors when the texture-map is bilinearly interpolated. The end result is that when viewed at close range, the texture map has an apparently higher resolution than it actually does, keeping magnified texture maps from looking blocky. Ultra 64 and M2 are the only next-generation systems which will support bilinear interpolation. See illustration

Intro Sequence • Generally the "intro" is a fully animated sequence that appears when a game is first loaded and explains the back story of the game and may introduce the main character and enemies

ISA • Industry Standard Architecture • Invented by IBM and non-proprietary, ISA became the standard for 16-bit PC bus architecture

ISDN (Integrated Services Digital Network) • A high-speed digital line can transmit data faster than a 28.8 K modem can across a standard (analog) phone line. Often used for Internet connection from offices and homes

Isometric View • A game perspective that presents the action as if viewed from above and at an angle. *Zaxxon* was the first game to be seen this way, and later examples include *Populous*, *Landstalker*, and *Captain Quazar*. Also known as a 3/4 view

Jaggies • A stair-stepping effect in graphics caused when the resolution of the display device is too low to accurately simulate a diagonal line or curve

Jaguar • A next-generation cartridge system released by industry pioneer Atari in late 1993, Jaguar has a Motorola MC68000 CPU and two 64-bit RISC graphics coprocessors. Although the system has some power, the software support is notoriously weak, with mediocre games being the rule rather than the exception. Software standouts include *Tempest 2000*, *Rayman*, and *Power Drive Rally*

JAMMA • **1)** The Japanese Amusement Machine Manufacturer's Association **2)** A standard format of arcade game circuit boards that enable machine owners to swap JAMMA-compatible circuit boards between JAMMA-compatible arcade machines to change the game that is played on them. This enables the same cabinet to be used for a variety of games, thus reducing costs to the arcade owner

Joypad • An input device which works the same as a joystick but without the stick. Instead, there is a pad (usually called a D-pad) which is cross shaped (Nintendo has the patent on the cross, so non-Nintendo joypads usually feature a cross in a circle) and is manipulated with the thumb instead of the hand. There are also usually two or more buttons on the joypad. Joypads are much more common on console systems than on the PC, where joysticks are more popular

Joystick • An input device which consists of a stick, a base unit, and at least one button. Moving the stick can move objects on-screen (like your character) and pushing the button(s) perform(s) some actions. There are two types of joysticks, analog and digital. While analog joysticks relay to the computer how far in a given direction the joystick is being moved, digital joysticks merely indicate if the joystick is being pushed in a certain direction or not. Its output is binary, and hence less flexible in use

JPEG (Joint Photo Experts Group) • A compression standard for still images which has variable levels of compression. JPEG is a "lossy" standard — the more you compress the lower the quality of the resultant image. Still, JPEG offers one of the best compression-to-quality ratios available

Kalinske, Tom • President of Sega of America, he masterminded Sega's challenge to Nintendo's videogame dominance with the Genesis in the 16-bit era

Kilobyte • One thousand bytes. A measure of memory storage capacity. Abbreviated, "K." Can also refer more precisely to 1024 bytes, depending on the usage

Latency • Refers to the time lag between when a command is given by a remote device (such as a home computer) and when it is executed (by an online service, for instance). Latency is a huge problem with online gaming, since many games require an instant response, and even a tiny latency can destroy the feel of gameplay

Level • A level is a discrete stage in a game. In early games, such as the original *Donkey Kong*, each level was almost a complete game, with a specific end unto itself, and each level was markedly different. In one you might need to wind your way up the girders of a building, avoiding barrels, while in another the goal might be to cross over rivets in girders while avoiding roving fireballs. In more modern games, the levels often scroll off the screen. Sometimes levels are called "stages" or "zones" as well, and often groups of similar levels are grouped into mega-levels called "worlds." Generally it is accepted that more levels a game has the better it is

Licensed Games • Any game based on a story or character from another medium, such as a movie, comic book or TV show (*Batman Forever*, *Beavis and Butt-Head*, *Bart's Nightmare*, etc.)

Licenses (NBA, MLB, etc.) • In sports games, getting key licenses, like those of major league sports and players unions, is vital for success, so players can play with "real teams" and "real players"

Lieberman, Joseph, D-Conn. • Pushed the videogame industry into establishing a ratings system (1994)

Life • Many videogames give you three chances with which to play. These are commonly called lives, because most of the time failing in a videogame results in your character getting killed in the game fiction. When all the lives are lost, the game is over. Almost always, there is a way to get more lives, either by finding special items or reaching a certain score in the game

Light Gun • An input device that resembles a gun. The gun is in sync with the screen update rate. It can also sense when the pixel at which it is pointed is updated, and from those two pieces of data, can determine exactly at which pixel on the screen it is pointed at any given time

Lincoln, Howard • Chairman of Nintendo of America

Linear • An adventure game in which almost all the puzzles must be completed in a specific order is linear. You must progress through the game in a straight line, as though you were reading a book. Linear games tend to have limited puzzles which are either extremely easy or extremely hard

Load Time • The time it takes for information to transfer from a storage device, like a CD-ROM or cartridge to RAM. Long load times from CD-ROMs were initially thought to be a potential problem with next-generation systems, however few consumers have complained

Low-Res • An image or game that has a low resolution. See *resolution*

Lynx • Innovative hand-held system developed by R.J. Mical and David Needle at Epyx (who would later develop 3DO), under the code name "Handy." It was sold to Atari after Epyx went belly-up. Released in 1990, the unit featured a large color screen, a 16-bit graphic coprocessor (with an 8-bit processor), hardware rotation, eight-player network ability, and an excellent crop of initial games. Hampered by slow software releases and a minimal marketing budget, the Lynx, while still available in many stores, is functionally dead

Mac OS • The operating system for the Macintosh series of computers, the Mac OS features a hierarchical file system and an easy-to-use (but processor draining) graphic user interface

Man • See *life*

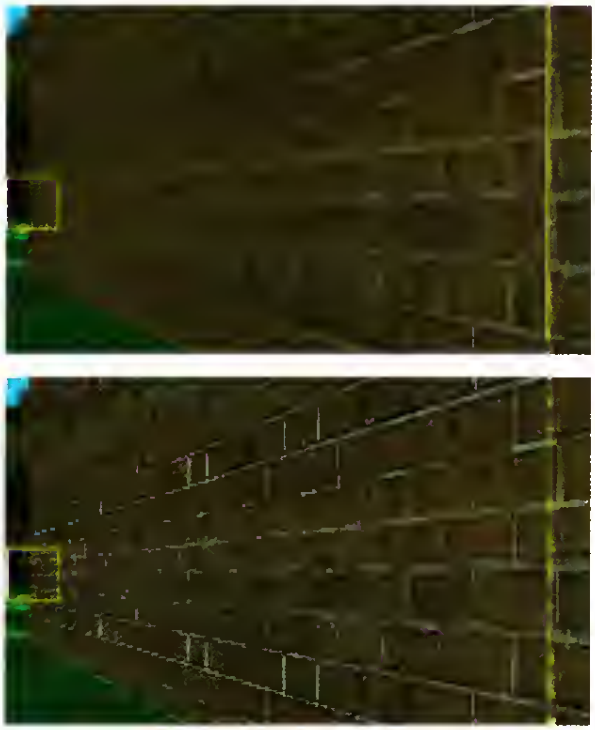
Marketing Blitz • A coordinated public relations and marketing attack designed to generate hype for a game, hardware platform or even simply a promotional event. It typically includes print and TV advertising, attempts to get editorial coverage (especially covers) in enthusiast and general interest magazines, and hopefully, along with the rhetoric, this blitz includes a good game

Mascot • A character, usually cartoony, who acts as a symbol for a company and may star in the company's games. Examples include Nintendo's Mario, Sega's Sonic, and Crystal Dynamics' Gex. Mascots often appear in company literature and frequently have cameo appearances in games in which they do not play a major role. For instance, there is a bas-relief of Sonic carved into a mountain in *Daytona USA*

Master • Technically, this is a piece of hardware used in the actual creation of a CD; in game terms, it means the copy of the game, usually on a CD-R, that is exactly what consumers will see in their boxes

Match • In modern pinball games, at the end of the game, numbers appear. One set for each player, and the match number. If the match number "matches" a player's number, he or she gets a free credit on the machine

Maze Game • A game that consists, in whole or part, of being chased (or chasing things) around a maze, which may or may not fit entirely on the screen. The most classic examples of a maze game are Namco's *Pac-Man* and *Rally-X*, but games such as *Doom* or



Top image is bilinearly interpolated, trilinearly mip-mapped and perspective corrected. Contrast with aliasing in point sampled image (bottom)

Descent can also be thought of, to some degree, as maze games

Megabit • (archaic) A megabit is one million bits, equal to 256 kilobytes, or .25 megabytes. During the cartridge era, cartridge size was usually given in megabits. Abbreviated, it's "Mbit"

Megabyte • One million bytes. A measure of memory storage capacity. Abbreviated, it's "MB"

MegaDrive • The European name for Sega Genesis

Memory card/cart • A cartridge that contains RAM instead of ROM and is used to save games when a battery back-up isn't possible (i.e. on CD-ROM based systems)

Miyamoto, Shigeru • Head of Software R&D, Nintendo Corporate Ltd. Creator of *Mario*, *Zelda*, and *Donkey Kong*. Creative force behind *PilotWings*, *F-Zero*, and *Super Mario Kart*. *Mario* games have sold more than 115 million units worldwide

MFLDPS • Millions of Floating Point Operations per Second. A measure of the math prowess of a processor. Floating-point operations are more costly in terms of processor power, but they're also more precise. They are used extensively in 3D rendering

MHz • A megahertz is one million cycles per second and is used as a measure of computer speed, with higher numbers being better. A quartz crystal with a specific resonating frequency is in every processor, and the frequency at which it vibrates regulates the cycles of current going through the processor which allow it to perform tasks

MIDI (Musical Instrument Digital Interface) • MIDI is a standard that enables electronic musical devices to communicate with each other. Music can be stored in MIDI format which contains instructions for playing the music rather than the digitized music itself, which drastically lowers storage requirements

Mine Cart Level • A level in a (usually side-scrolling) game in which characters get into mine carts and careen around mines. Mine cart levels are generally faster than most, and involve memorizing the location of specific obstacles

Mip-Mapping • When viewing a distant texture-mapped object in a 3D world, many texels make up each pixel seen on the screen, causing the textures to often appear aliased or distorted. If point sampling, the most common texture-mapping technique, is used. Mip-mapping solves that problem by precomputing (that is, prefiltering) different levels of detail of your texture image, and accessing the appropriate level according to the object's distance from the camera. For example, a texture image which is 16x16 texels, will have four more mip-maps at lower resolutions, 8x8, 4x4, 2x2 and 1x1. Bilinear mip-mapping chooses the closest mip-map image to your pixel's level of detail, then performs a bilinear interpolation upon that texture image to get the color value for the pixel. Trilinear mip-mapping requires over twice the computational cost, as it chooses the two closest mip-maps, performs a bilinear interpolation on each, then averages the two results to arrive at the final screen pixel value

MIPS • Millions of Instructions Per Second, a measure of the computing power of a processor

Mode 7 • This graphics mode in the Super NES enables scaling and rotation of the background image. Although a much ballyhooed feature prior to launch, few programs have effectively used it outside of flashy intro sequences and cut-scenes

Modem • Contraction of MOdulator/DEModular, a modem is a device which converts digital computer signals into analog signals so that computers can send data over phone lines to other computers

MOO • A text-based virtual environment, a MUDs object-oriented is similar to a MUD, but is used for purely social interaction, not gameplaying

Motion Capture • A process by which an object's motion through 3D space is digitized. Sometimes mechanical systems are used, but the most common capture method uses an array of video cameras operating in infrared frequencies to capture the motion of special markers (usually balls of reflective tape) in 3D space. The object being captured (a human making a pitching motion, for instance), has several reflective balls attached at key points, like the head, hands, joints, etc., and is then filmed by the cameras (most often an array of six cameras is used). The video is composited by a computer, and since the base position of the cameras is know, the 3D location of the balls can be interpolated by the difference in ball position in the camera views in each frame. The end result from motion capture is basically the motion of the skeleton of the thing captured, around which can be "wrapped" a 3D modeled character, to generate extremely life-like animation. Games such as *Virtua Fighter 2* and *NFL Game Day* use motion capture effectively

Motion Tracker • Any one of several different units designed to follow the motion of a control device. Different methods include optical tracking, which uses light in determining an object's location and magnetic tracking, which detects changes in the orientation of the Earth's magnetic field. Most commonly found in various VR devices

Moves • At its most basic, a move is anything a character can do in a game. While early games, like *Galaga*, may have had only three moves (move left, move right, and shoot), newer games, particularly fighting games, may have hundreds, from low punch, to block, to mid-kick, etc. Often, in fighting games, many of the moves are hidden, and not revealed in the documentation

Movie Tie-in • A game whose appeal is based purely on its movie license, not the quality of the gameplay. Generally, the quality of movie tie-in games is extremely low, as publishers count on the quality of the license to sell titles to less savvy gameplayers

MPEG (Moving Pictures Experts Group) • A standard for compressing full-motion video. It enables far more video to be stored in a given amount of space than when uncompressed. Like JPEG, MPEG is "lossy" and MPEG compressed video is of lower quality than standard VHS video

MUD (Multi-user Dungeon) • A realtime Internet game where users can adopt aliases and participate in adventures and combat. As the name implies, any number of players can be on the site at once. Some MUDs rival RPGs in complexity while others focus strictly on person-to-person combat or social interaction

Multimedia • At its most basic, multimedia is an experience that involves more than one medium. TV, with the sound turned up, is multimedia. In general, though, multimedia refers to PC entertainment software that features sound, animation, possibly FMV, and interaction by the user. Most "interactive multimedia" products are far more restrictive than games, particularly in what you can do. Some multimedia products present themselves as games, while others are of an educational, reference, or nebulously defined "entertainment" nature

Multimedia Gulch • Region of San Francisco, in the formerly industrial South of Market district. It is the location of Macromedia, developers of *Director*, the premier multimedia authoring tool, as well as many multimedia developers. Named analogously to Silicon Valley

Nakamura, Masaya • Chairman and Founder, Namco

Nakayama, Hayao • President, Sega Japan

NEC Turbo Duo • A combined NEC TurboGrafx and CD-ROM unit

Neo-Geo/Neo-Geo CD • A 24-bit system developed by SNK, the Neo-Geo arcade unit enables the easy switching of games. SNK brought the concept home with the Neo-Geo Gold system and found a niche market with a steady stream of 2D fighters, shooters, and arcade sports titles. In an effort to bring cart prices down from the $200 zone, a single-speed CD based unit was released overseas, but not in the US. Still somewhat popular in arcades, the Neo-Geo is going nowhere in the home market

Neptune • A planned Sega product which would have incorporated a 32X and Genesis in one unit. It was scrapped due to dismal 32X sales

NES (Nintendo Entertainment System) • Nintendo's 8-bit cartridge system, introduced in the US in limited markets in 1985, against the advice of almost everyone on the continent, who, still smarting from the crash of '83-'84, thought that videogames were finished. Nintendo single-handedly revitalized the industry and was rewarded with total market dominance, which lasted until Sega introduced Genesis

Net Surfer • Someone who spends time exploring the Internet (particularly the World Wide Web)

Network Games • Multiplayer

games run simultaneously on many computers or consoles which are networked together, either locally or remotely (generally through a direct modem connection, the Internet or an online service). The advantage of network gaming is that playing a game with other people is almost always more engaging than playing against a computer. the disadvantages include problems with latency and the fact that most local networks exist only in the workplace, not the ideal environment for playing games

Neural Network • A group of software-simulated "neurons" which can be collectively trained to identify patterns in data

Next Generation • **1)** An adjective referring to the newest wave of gaming technology, beyond the current state of the art hardware technology **2) NEXT Generation** — A magazine that publishes extremely in-depth material on the gaming industry and which no clever gamers are without

Nomad • An elegant hand-held version of Sega's Genesis, it was released in November 1995. Battery powered, it provides video output and can accept a standard Sega controller as an accessory. It accepts any 16-bit Genesis cartridge

Nonlinear • An adventure game in which most puzzles need to be completed in no special order is considered nonlinear. Less structured than a linear game, it is almost always considered preferable

NPC (Nonplayer Character) • Taken from the world of pen-and-ink role-playing games, an NPC is a character encountered in an RPG who is not controlled by the user

Object Code • The machine language instructions run directly by the microprocessor, the object code is generated when the source code is compiled

One-up • In early two-player simultaneous games, this message would flash on-screen when the first player received an extra life. Two-up would appear when the second player got an extra life. Since then, though, it has come to be shorthand for getting an extra life, usually not by accumulating a certain number of points, or items like coins or rings, but by finding a special icon. The icons themselves are often called one-ups

One-up loop • A flaw, sometimes intentional, in the level design of a side-scrolling game, which enables you get at least two free guys and then die, leaving you with a net gain of one life and restarting you at a point in which you can then do the loop again. Basically, if you have enough patience, you can use a one-up loop to get an infinite number of guys. The most famous one-up loop is the fourth level of *Sonic 2*

Online • A word whose meaning has evolved far past the original definition. online was originally a term used when a remote device, like a printer, was connected to a computer and ready to receive data. Now, however, online is most commonly used as a noun to refer to the state of a local computer when it is attached to a remote network like the Internet or a commercial service like CompuServe

Operating System (OS) • The program that runs a computer, whether a PC, Genesis, or PlayStation. It is loaded into the computer's memory first when it is switched on, and acts as the interface between the hardware and the software that runs on the system

Over the Shoulder • See *second person*

Overhead • Also known as top down, this is just what it sounds like — looking down on the action, as if the roofs of buildings had been removed and you are floating above them. Often the on-screen characters are seen as if from the side, or foreshortened to simulate perspective

Pajitnov, Alexei • Creator of *Tetris*

Parallax Scrolling • A method of simulating a 3D feel by having multiple background planes moving at different speeds with the planes that are "farthest" from the player moving more slowly than those in the foreground

Password • A series of alphanumeric characters that can be entered into a game to restore a previous game, either starting you on specific level or restoring a game to that state it was in when the password was received. A password is different than a code in that passwords are not hidden, while you may need to get to a certain point to receive one, using them is not cheating

PCB (Printed Circuit Board) • Literally a fiberglass board to which chips and other electronic components are affixed. Extremely flat copper pathways connect the components. A "motherboard" is the main PCB in a system

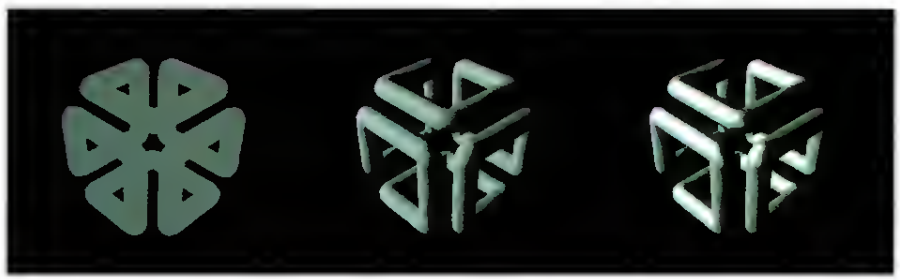
PC Engine • Japanese name of the TurboGrafx

Perspective Correction • Also known as inverse texture mapping. Without this, texture mapping is done relative to the 2D screen, causing the texture to "swim" and deform as the object moves in 3D space. By mapping the texture in 3D perspective space, this effect is negated, but at considerable computational cost. Lack of perspective correction is most apparent when looking at a texture mapped object which recedes far into the distance, like the ground or a wall

Phong Lighting • A method of lighting a 3D world, the phong lighting model applies three different types of lighting to the vertex of every polygon. Phong lighting works by performing operations based on the normal of the polygon, the "normal" being an imaginary line drawn orthogonal (straight up from) the face of the polygon. The first of the three lighting types is ambient light — light which is just there because god (in this case the programmer) said it was. It affects every polygon equally. Diffuse lighting is the second type. It assumes that there is no reflection from the objects it is lighting (clay is an example of a nearly perfect diffuse surface), but it does take into consideration the angle that the light hits the surface. If it hits it fully, it will be 100% illuminated, if the object is turned slightly, it will be less illuminated, etc. The third aspect is called specular highlighting, which takes into account the angle between the light-source and the "eye" of the viewer, so that if the light bounces off a particular spot on the object straight into the "camera" it will be illuminated 100%, and less so if it misses the camera. The phong lighting model is fairly realistic for games, but fails to account for the fact that in real life, reflections off of steel or other metals change color depending on what angle they're viewed from, while specular highlighting always gives a reflection of the same color. Phong lighting works only on the vertices of a polygon (using Gouraud shading to color the rest of the polygon), so if a highlight happens to fall in the middle of the polygon, it will be missed, which requires programmers to "tessellate" or break-up large polygons into many small ones to be sure of "catching" highlights at vertices. However, phong lighting is very fast and doesn't require much processor power

Phong Shading • A method of shading that applies the phong lighting model not to every polygon, but to every pixel of every polygon. Even SGI's Reality Engine can't do Phong shading, so unless you're ready to spend a few million dollars on your next game machine (and write all the games yourself), don't expect to see phong shading anytime soon

Photorealistic • An image which approaches photographic quality.



Damonstration of phong lighting, shawing ambiant lighting (left), ambiant and diffuse lighting (center), and ambiant and diffuse light with apecular highlighta (right). Phong lighting ia a fast way to light 3D worlda

With a large enough color palette (around 16,000 colors) it is possible to display photorealistic images on a TV or computer screen

Photoshop • Premier graphic retouching software from Adobe. It is used at some point in the creation of almost every single reproduced graphic image you see in magazines, advertisements, and games

Pippin • An Apple-licensed "multimedia player" console to be introduced by Bandai in Japan. Pippin uses the Mac OS and hardware. Basically, the Pippin is a nonexpandable Mac Jr. that uses a TV as the monitor

Pirate • Someone who illegally copies games

Pixel • Short for Picture ELement, it is the smallest discrete unit of a computer or TV tube that can be assigned a specific color, the "dots" that make up TV and computer screen pictures. It is also used to refer to smallest element in a digitized image

Pixmap • Contraction of pixel map, this refers to any digitized image, and is the correct term for "color bitmaps," although it is rarely used outside the computer graphics community

Platformer • A sub-category of action game characterized by requiring the player to (in addition to any shooting and fighting) make his character run and jump across gaps and other obstacles. See also *side-scrolling action game*

Player Killing • On a MUD, player killing is just what it implies, killing another player character — the character of another human, not an NPC. On most MUDs this is discouraged, although on some it thrives

PlayStation • A 32-bit videogame console introduced by Sony in September 1995. As of January 1996 it had sold more units in the US than any other next-generation console. It features excellent graphic capabilities and has a superior game library

Point Sampling • The standard way for mapping a texture map to a 3D object. Only one point on the texture map is looked at per pixel. When the object being mapped is very close to the camera, the same texel is mapped to many pixels, resulting in the blocky close-ups found in *Doom* and other games. When the object being viewed is far from the camera, the distance between texels represented in contiguous pixels is too great, resulting in a swimming, aliased effect. Contrast with *interpolation, mip-mapping*

Polygon • A three or more sided 2D shape from which 3D environments are created, and which can then be represented on a 2D screen

Power-up • An icon that is either hidden in a level or appears when an enemy is killed, which, when "picked up" by the player (either by touching it or shooting it, generally), gives the character special powers, which are sometimes temporary and sometimes last until the player is killed or moves on to the next level

Prerendered • A 3D scene which is rendered and then stored, usually as a bitmap. Prerendered images are often used as backgrounds and sprites in 2D games, like Nintendo's *Donkey Kong Country*. Unlike scenes which are rendered in realtime, you cannot change the viewing angle or size of a prerendered image

Preview • Often confused with a review, a preview in a magazine is a noncritical look at an unfinished game, provided to give readers a sneak peak at upcoming software. **NEXT Generation**'s alphas section contains previews

Price Point • A marketing term To figure out its meaning in English, drop the word "point." It is generally used abstractly, as in "For a system to succeed it needs to come in under a $200 price point"

Probst, Larry • President and CEO of Electronic Arts

Producer • Although the roles of producers differ at different companies, generally, the producer coordinates the activities of the designer, programmers and artists on a game

Programmer • the person who actually writes the code that makes up a game. Ten years ago, programmers were often also the designers and artists of their games, but this is now the exception, not the rule

Propeller Head • A geek

PS-X • A prelaunch name for the Sony PlayStation, the "PS-X" evolved out of the name of the original, unreleased PlayStation, which was to be a CD-ROM add-on for Super NES. This unit, the "PlayStation X" evolved into the system that was released by Sony on Sept 9, 1995, the PS-X, or, more formally, PlayStation

Publisher • A company which actually physically produces discs, boxes, and manuals, and handles getting software boxes into stores as well as marketing and advertising. Publishers may develop their own games (like Interplay) or they may contract all their games out to independent developers, or they may do some of both

Puzzle • In an adventure game, the challenges that you must overcome are called puzzles. One classic puzzle comes from *Zork II*. A certain door is locked and the key is in the lock, on the other side of the door. To get it, you must find a place mat and a letter opener, slide the place mat under the door, push the key through with the letter opener, and pull the place mat back. The quality of an adventure game is based entirely on its puzzles

Puzzle Game • A genre of game in which you solve puzzles which generally involve manipulating shapes and colors. The most famous example is *Tetris*, and its many clones, like *Columns*

Quad Speed • A measure of speed of CD-ROM drives. A quad-speed drive, the current standard, spins the CD four times as fast as the original standard called for (a single speed drive), and enables the computer to take information off the CD four times as fast

RAM (Random Access Memory) • This is temporary memory in a computing device in which is stored information directly relating to what the processor is currently working on

Rasterization • The process of going from a mathematical, polygonal representation of a 3D scene to a 2D image displayed on a screen. This is where the intensities of lighting on polygons are translated into actual color values for pixels on the screen

Rating(s) • In 1994, after a '50s style senate witch-hunt in which videogames were blamed for every problem facing American youth, the videogame industry caved in and implemented a ratings system. See also *Lieberman, Joseph*

Ray Tracing • A way of rendering a 3D image which follows the path of every ray of light. Noninteractive, it works best for rendering images which have many reflective surfaces, like steel balls

RCA Cord • The standard connecting cord for video and audio information. Yellow cords are for the video signal, white is for left channel audio, and red cords are for right channel audio

Realtime • Adjective which indicates that the thing it modifies happens immediately. Almost all games, except adventure games, function in realtime

Red Book • A CD standard named for the color of the cover of the book that described it. Red Book CDs are standard audio CDs. Some CD-ROMs contain tracks of Red Book audio

Render • When the computer creates a graphic representation of an abstract mathematical 3D model. It can take hours to render an extremely complex scene (like a frame from the movie *Toy Story*); 3D games exist in an environment which can be rendered enough times per second to provide the illusion of actual motion. This is known as being rendered "on-the-fly" or, in realtime

Resolution • A measure of the density of pixels on a screen, measured by two numbers, which represent the number of pixels available across and down the screen (e.g. 640x480). Many computers and game systems can generate video output at a variety of resolutions. Higher numbers are capable of displaying more detailed and lifelike images

Review • An article in a magazine which provides a critique of a game, often with ratings

RF Box • In older TVs which had no direct video-in cables, an RF box could be attached to the antenna attachment and video and audio signals were fed into the TV via the RF box, which turned the signals into electrical impulses that the TV interpreted as coming from the antenna

RGB • Red, Green and Blue, refers to the way monitors and TVs create color images. Creating colors on a screen is an additive process, in which the primary

colors are red, green, and blue (in the reflected color model, the primary colors are magenta, yellow, and cyan — often misconstrued as red, yellow, and blue). Each pixel on a screen is made up of three sub-elements, one red, one green, and one blue. When each sub-element is excited by the electron gun in the back of the tube, it glows. Depending on the intensity with which it glows, it can have a state somewhere between black (not glowing) and fully red, green, or blue. When all three sub-elements are fully glowing, the pixel is perceived by the eye as glowing white. By varying the intensity at which the various sub-elements of the pixel glow, different colors are created. Computers and consoles can cause the sub-elements to glow at a certain finite number of intensities. If the system can generate 8-bit color, it can make each sub-element glow at 8 different intensities (one per bit), which results in 256 different colors. The number of colors that can be displayed is equal to 2^X, where X is the number of bits assigned to color. See also *bit*

RISC (Reduced Instruction Set Computer) • A processor architecture in which the amount of operations the processor can perform on data is limited, but which is much faster than standard CISC chips. Preparing instructions for a RISC processor takes far longer than with a CISC processor, since a RISC processor can handle fewer commands. Since most computer programs are written in C++ or another high-end language, the only thing that needs to talk to the processor is the program (called a compiler) which translates the C++ into machine language. This makes using fast RISC chips, like the Power PC, much more attractive. RISC chips are smaller and run cooler than CISC chips with comparable power

ROM (Read Only Memory) • This is memory data that can be read by the CPU, but cannot be rewritten over. Traditionally, ROM was found only inside computers. Cartridge games changed that, by storing games on ROM chips which were inserted into the system. The use of CDs as a storage mechanism changed the definition again, as ROM left chips and began residing on plastic discs

ROM Burner • It can either be a hardware device to burn memory into chip ROMs, or a device used in the manufacturing process of CD-ROMs

Rotation • Some consoles, like the Super NES, have the ability to rotate sprites in hardware, which made rotation very fast and fairly smooth

Rotoscoping • A way of creating animation by tracing the movements of human actors from film or video. Previous to the advent of motion capture, this was the best way of getting smooth, humanlike animation

Round • Similar to boxing, fighting games are generally fought in matches, which consist of an odd number of rounds. The first player who wins the majority of the rounds, wins the match

RPG (Role-playing Game) • The category means slightly different things depending on whether one talks about PC RPGs or console RPGs, but the main characteristic of both is that the player is free to move from place to place in the game environment, interact with other NPCs, solve puzzles, find and collect tools and weapons, keep track of numerous character statistics like Hit Points, and (usually but not always) combat is decided by choosing battle options from menu screens. Console RPGs, heavily influenced by Japanese games like the *Phantasy Star* and *Final Fantasy* series, tend to have a strong emphasis on storyline and character interaction, while PC RPGs, typified by the *Might and Magic* series, more heavily favor statistical bookkeeping and tightly constructed puzzle solving

Rubbernecker • Analogous to the "tire kicker" who frequents car dealerships without ever making a purchase, a rubbernecker is someone who hangs around game stores like Electronics Boutique or Software Etc. without ever buying a game. Most hard-core gamers "rubberneck" from time to time

Rumor • Because of the fiercely competitive nature of the videogame industry, these are very secretive, which makes the climate perfect for rumors to sweep through it like wildfire. The Internet also facilitates the transfer of unconfirmed information. Some magazines present information for which they can get no official confirmation (usually because it's bad news) as rumors

Russell, Steve • MIT hacker who invented *SpaceWar!*, the first modern videogame, in 1962. Now working at Digital Pictures

Scaling • Some consoles like the Lynx and Super NES, for instance, had the ability in hardware to scale sprites very quickly and very smoothly

Saturn • A 32-bit console introduced by Sega in May 1995, it features dual Hitatchi 28 MHz RISC processors. Released early in a surprise move by Sega, it suffered until late 1995 when the first excellent titles, *Virtua Fighter 2* and *Sega Rally* were released

SDK • Software Development Kit. A collection of programming libraries and routines, basically an SDK is a set of premade building blocks of code for programmers, so they don't have to waste time rewriting very basic — or very complicated — pieces of software, like sprite-scaling routines, or networking protocols

Second Party • A company which publishes software exclusively for a single company. SquareSoft is a defacto second party publisher for Nintendo. See also *first party* and *third party*

Second Person • A game perspective in which the player's view is locked behind (and usually slightly above) their on-screen character, as in *Virtual Hydlide* or *Drahken*

Sega CD • A CD-ROM drive add on for the Sega Genesis. Hampered by poor sales, long load times, nonrevolutionary graphics, and flat-out bad games, the Sega CD never caught on and died a quiet, unnoticed death when Sega pulled the plug on it in late 1995

Set-Top Box • A media invention that goes along with the information superhighway, the set-top box will (in the future) control your cable, Internet access, play games, and do everything else you could ever want it to do. Some companies have attempted to generate some media hype by referring to their consoles as set-top boxes

7800 • Follow up to the 2600 and 5200 (2600 + 5200 = 7800), this 8-bit system was shelved by Atari in 1983, and not released until the NES took off after 1985. It never had the following of the NES and suffered from too little third-party development. The system could play 2600 games as well as games designed for it

SGI Workstation • A high-powered 3D workstation of which many of the graphics and animation in next-generation games come from Silicon Graphics, Inc.

Shareware • Software which is made easily available (usually online) with a "try-before-you-buy" strategy. If you download and use the software, you are expected to pay the shareware fee. Shareware is based on the honor system, but many games have key features disabled or don't include all levels until you pay the shareware fee

Ship Date • The date a software or hardware product leaves manufacturing and is shipped to retail outlets. Also used generically by development staffs to refer to the date they ship the product to manufacturing

Shoot-'em-up • See *shooter*

Shooter • A game consisting mainly of shooting enemies and avoiding bullets (or lasers, bombs, etc). Often, they contain power-ups which improve the quality of your weapons, or add options like bombs, etc. The first shooter is generally acknowledged to be *Space Invaders*. They can be forward-scrolling (Namco's *Burning Force I*), side- scrolling (Williams' *Defender*), vertically scrolling (*Raiden*), top-down (*Loaded*), first-person (*Doom*), isometric (*Zaxxon*, *Crusader*) and non-scrolling (*Galaga*)

Shovelware • A CD-ROM that contains exceptionally poor software, designed to sell units to uninformed consumers; also, a CD that contains dummy files to appear more full than it actually is

Side-Scrolling • The planes of the foreground and background move from left to right or vice versa

Side-Scrolling Action Game • A sub-category of action game which consists of having your on-screen character run (usually from left to right), and jump, shoot, fight, collect special items, etc. as he or she goes. Possibly the most prevalent action category, it stretches back at least as far as the original *Pac Land* and *Mario World*, through the *Shinobi*, *Ninja Gaiden*, and *Castlevania* series, to present examples such as *Cutthroat Island*, just to name a (very) few. The number of such titles has steadily dwindled as the use of 3D has caught on

Sidekick • A special sub-category

of mascot, a sidekick is the main mascot's friend, who often takes a subservient role in the mascot's game. Examples include Yoshi (Mario's sidekick) and Miles "Tails" Prower (Sonic's sidekick). In rare cases, a sidekick (like Sonic's sidekick Knuckles) may eclipse his or her mentor and get their own game (*Yoshi's Island, Knuckles Chaotix*)

Silicon Valley • An area surrounding San Jose, CA, which is the location of many high-tech companies, including Apple Computer, Atari, Xerox's famed Palo Alto Research Center, NASA's Ames Research Center, and many more

Siliwood • A word coined to describe "the marriage of Silicon Valley and Hollywood," in new interactive entertainment endeavors

Simulation (Sim) • Any game which attempts to re-create, with as much detail and realism as possible, any "real" activity. Action-based games which "put you in the driver's seat" of a tank, plane, ship, and so on, are the most typical examples, but the category has been stretched to include some kinds of strategy titles which attempt to re-create certain real-life resource management problems, such as *The Perfect General* which attempts to "simulate" running a war. See also *flight sim*

16-bit • **1)** The processing power of a chip or system, refers to how many bits on information can be handled by the processor at once. Can also refer to the width of a bus or data path **2)** A way of describing graphic power. 16-bit color is usually 32,000 colors — 15 bits of color, with one check-bit. In some cases, 16-bit color is 64,000 colors. See also *bit*

64-bit • The processing power of a chip or system. 64 bit refers to how many bits of information can be handled by the processor at once. Can also refer to the width of a bus or data path. See also *bit*

SKU (Stock Keeping Unit) • Pure marketing jargon. In plain English, an SKU is the box that the software or hardware comes in. Pronounced "skew"

Slip • When a product misses its ship date, it slips. Also can refer to the ship date (e.g. "the ship date for *Stoathunt* slipped")

Slipstream Release • Often when a product is rushed to market (to make a heavily advertised release date, for example) it ships with bugs in it. Rather than recalling the software, the bugs are quietly corrected and the new software is "ship-streamed" shipped in place of the flawed original without any announcement. Sometimes people who find the flaw in the first shipping copy receive a free upgrade if they call and complain. Sometimes not

SMS (Sega Master System) • Sega's 8-bit answer to the original NES, it and the Atari 7800 shared less than 10% of the U.S. market to Nintendo's 90+% in the 8-bit age

Software Emulation • See *emulation*

Sound Blaster • A soundcard for PCs by Creative Labs, the Sound Blaster is the standard for PC sound

Sound Card • An add-in card for PCs which allows these computers to produce sounds more impressive than a rudimentary "beep"

Soundtrack • The background music that may play when one is playing a game. It is distinct from the sound effects generated when events occur in the game

Source Code • Computer instructions written in a language like C or Pascal, which a compiler translates into object code and which is then read directly by the CPU

SPA (Software Publishers' Association) • A trade group made up of PC software companies, including many game companies

Sprite • A 2D graphic object onscreen which can be manipulated without effecting the background images. Most pre-32-bit systems used sprites for everything that moved on-screen

Stage • Synonym for level, in some games it is also synonymous with world. See *level, world*

Stand-up • Another name for a coin-operated videogame. This is the standard arcade game format, as opposed to "sit down" deluxe games, like driving games, or games in a cocktail table format

Storyline • Many games feature a storyline or plot which provides a rationale for the gameplay. Game storylines are generally very simplistic (e.g. "you must rescue the princess"), although RPGs may have exceptionally complex, involved storylines

Sub-boss • An enemy which is larger and/or more powerful than the enemies usually encountered in the course of a game. Although, like bosses, sub-bosses are also usually singular enemies, often they are encountered more than once, usually in the middle of a stage or level, or as a prelude to encountering the actual boss. See also *boss*

Super Famicom • The Japanese name for the Super Nintendo Entertainment System (Super NES)

Super NES • The Super Nintendo Entertainment System, Nintendo's 16-bit cartridge game console

Suzuki, Yu • Chief Manager, R&D Amusement Division, Sega, creator of *Hang On* (1985), *Space Harrier* (1985), *Out Run* (1986), *After Burner* (1987), *Power Drift* (1988), *G-LOC* (1990), *R-360* (1990), *Virtua Racing* (1992), *Virtua Fighter* (1993), *Daytona USA* (1994), *Virtua Cop* (1994), *Virtua Fighter 2* (1994), *Virtua Striker* (1995), *Virtua Cop 2* (1995)

SVGA (Super Video Graphics Array) • A graphics standard that began when graphics card manufacturers created cards that were able to display 640x480 at 256 colors. Higher resolutions than 640x480, such as 1024x768 (at any number of colors), are also grouped under this term

S-video • A video cable standard that is less subject to interference than standard video RCA cables

Tester • Someone who is paid by a software company to play a game extensively to ensure that it is bug-free and that the gameplay is at the appropriate difficulty level

Texel • A texel is the term for the dots that make up texture maps (many people incorrectly call these bitmaps). Because texture maps scale larger and smaller as the object which is texture mapped moves toward or away from the camera, the dot which defines the color at any given point of a texture map may correspond at a ratio of less than or more than 1:1 with screen pixels. Thus, we call them "texels" to underscore the fact that, unlike the pixels that make up a standard bitmap, their size may be different from a screen pixel

Text Adventure • One of the earliest kinds of computer games, predating screen graphics or even video screens (early text adventures could be played entirely on printers, if necessary), most typified by *Zork I-III*. Descriptions of what you "saw" were printed out, you responded by typing in simple, usually two-word commands, "light lamp," "go west," etc. — known as "text parsing" — and were told what happened. Later text adventures incorporated graphics to show an area, and text parsers even became able to understand full sentences, but by then, graphic interfaces were becoming increasingly popular and common

Texture Map • A special kind of bit-map, texture-maps are laid over or wrapped around polygons in 3D games to enhance the realism of the look of the game. A map of bricks may be laid over a polygon wall, for instance, like in *Doom*

Third Party • A company which publishes software for a console that it doesn't produce. Almost all software publishers are thus third parties. Getting the support of independent third parties is considered essential for a platform's (or first party's) success

Third Person • The most common view in games, especially 2D games. The character you control is seen from the side or back, and moves independently about the screen

Throttles • Input device that looks like the throttle of an airplane, they are used to provide greater realism in PC flight simulators

32 bit • **1)** The processing power of a chip or system which refers to how many bits of information can be handled by the processor at once. Can also refer to the width of a bus or data path **2)** A way of describing graphics power: 32-bit color is 16,000,000 colors — 24 bits of color, with eight check-bits. See also *bit*

32X • An underpowered 32-bit add on for Sega Genesis that plugged into the cartridge slot. The 32X had two 23 MHz RISC processors, and could lay an additional layer of graphics over the standard Genesis display. It could display more colors than the standard Genesis display as well. Introduced at Christmas 1993, it never caught on. Almost all 32X projects in development were canceled by Sega in late 1995, due to lack of system support

3D Accelerator • A hardware add-in board that speeds 3D operations on PCs, accelerators are not optimized for displaying graphics

3D Fighting Game • A sub-category of fighting game (see *fighting game*) in which the characters are represented by 3D polygon models rendered on the fly by the game machine, and where combat isn't restricted to a single line, allowing characters to dodge and roll from side-to-side. The first example was Sega's *Virtua Fighter*

3DO • A 32-bit system introduced in 1993, this console has an ARM60 RISC processor operating at 12.5 MHz. Originally pushed as a $700 "multimedia machine," it languished until the price dropped and games were emphasized. Still, it has not gained the foothold in the US that the 3DO company would like

Top Down • See *overhead*

Track Ball • An input device which is basically an upside-down mouse. Instead of moving the mouse, you move the ball directly. In the classic era, several games were trackball controlled, such as *Marble Madness* and *Missile Command*. There are no trackballs available for next-generation systems

Tramiel, Sam, Jack • President (Sam) and Chairman of the Board (Jack), Atari Corp.

TurboGrafx • System released by NEC in the late '80s, it used flat cards instead of cartridges, had an 8-bit processor with a 16-bit graphics processor, and had only one joystick port. Despite several innovations, like the first CD-ROM drive for consoles released in the US and an awesome handheld version of the console, the TurboGrafx never caught on in the US, although it still has an extensive following in Japan, particularly with RPGs

Turing Test • Named after computer pioneer Alan Turing, this is a test in artificial intelligence. If an AI program can successfully convince a human that it is human, we can conclude that this AI is actually intelligent

Turing Machine • Named after computer pioneer Alan Turing, a Turing Machine is a universal computer, a machine which can simulate any other machine. Basically, in proposing the Turing Machine, Turing was proposing the modern computer in which hardware is separate from software. A few early computers, like the Turing-constructed Enigma, were hardware units capable of "running" only one program, which was hardwired in

Two-player Game • A game in which two people can play. In some two-player games, players take turns playing, each going for high score. In others, called two-player simultaneous games, both players play at the same time. Fighting games are two-player simultaneous games, while pinball is not. Sometimes simultaneous games are cooperative with both players trying for the same goal

2D Fighting Game • A sub-category of fighting game (see *fighting game*) in which the characters are represented by flat bitmapped sprites, and are generally fighting along a single face-to-face plane (although some examples may have more than one plane), enabling characters to hop from the foreground to the background (*Fatal Fury* series). The sprites can be hand-drawn (*Street Fighter II*), digitized from actors (*Mortal Kombat*), or pre-rendered 3D models (*Killer Instinct*)

Ultra 64 • Nintendo's next-generation 64-bit system, the cartridge-based Ultra 64, codesigned with Silicon Graphics, contains hardware for mip-mapping, z-buffering, and bilinear interpolation

Vaporware • Software for which a release date is announced, but fails to ship on time, or ever

Vertically Scrolling • The planes of the foreground and background move from the top of the screen to the bottom or vice versa

VGA (Video Graphics Array) • A graphics card standard that demands a resolution of at least 640x480 at 16 colors. These cards also made 256 color graphics (at lower resolutions only) available to PC owners

View • Many 3D games provide multiple camera angles, or views, from which to see the action

View Volume • The portion of a 3D world that is actually viewed on-screen at any given moment

Vite • A special video sprite that contains FMV, it is used extensively in games from Digital Pictures, like *Quarterback Attack*, and enables many fields of FMV to be overlaid

Voxel • Beyond the polygonal texture-mapped world lies the voxel. A voxel is a 3D pixel, and exploring a voxel environment would be like visiting a world made of tiny little lego blocks. Voxel technology requires processing power far beyond that of the next-generation systems

VRAM (Video RAM) • This is memory in a computer or console that contains the image shown of the screen. It can be read from (painted on the screen) and written to at the same time and it is far faster than using standard RAM

VR (Virtual Reality) • Any attempt to make working with a computer mimic the actions that a user would use to do the same thing in real life. Different examples include first-person 3D graphic worlds, HMDs, Datagloves, and light-guns

Wave Table Synthesis • A way of creating sounds of simulated musical instruments by using samples of the instruments instead of purely electronic music generation

Windows • Cludgy, slow, graphic operating system shell for MS-DOS computers, it bears more than a passing resemblance to Apple's Macintosh OS

Windows 95 • A more sleek version of Windows for MS-DOS computers. Win 95 makes running games on PCs far easier for the end-user than under DOS, and it creates standards for game hardware

...With An Attitude • What many companies present their mascots as ("He's a bandicoot with an attitude!") in the attempt to make them sound "zany." To date, Sonic the Hedgehog is the only mascot that has ever been able to pull off the attitude thing ("Hedgehog with an attitude")

Wizard • Someone who has obtained a certain experience level on a MUD and is endowed with special powers, including, sometimes, the ability to add to the adventure world

World • Sometimes a series of similar levels in a game is grouped together in a mega-level heading called a "world"

Writer • In an adventure game or RPG, the writer handles dialogue and often description and backstories, but not puzzle design or plot

Yamauchi, Hiroshi • President of Nintendo Corporate Ltd. He took Nintendo from being a traditional Japanese playing card manufacturer to the largest videogame company on the planet

Yellow Book • A CD standard named for the color of the cover of the book that described it. Yellow Book CDs are CD-ROMs

Zany • An attribute which many companies would like you to associate with their mascots. Thanks to the popularity of Sega's wise-crackin' mascot, Sonic, many B-rate mascots also tried to go for the zany look

Z-buffering • When dealing with 3D graphics, it's very important that the computer not draw polygons that can't be seen by the user (that are off the screen or behind other polygons closer to the user's point of reference), since drawing, or rastering, polygons to the screen takes a lot of time. To avoid this in conventional 3D programming, the developers must take special care to note how polygons are drawn to the screen, in what order they are drawn, and they must keep a list, in memory, of the "order" in which the polygons go along the z-axis, so that time is not wasted drawing hidden polygons. Z-buffering is a hardware routine that takes care of the chores of knowing which polygons to draw and which to omit automatically. This speeds the process of drawing polygons to the screen and can allow a faster refresh rate. No 32-bit game machines support z-buffering, although Ultra 64 and 3DO M2 will

Z-line/Z-axis • In a 3D environment, the Z-line or Z-axis, is depth. The X-axis defines height, the Y-axis defines width, and the Z-axis defines depth into the world from the edge on the view volume (the screen)

Note: The illustrations which accompany this article are real-time images rendered on Silicon Graphics Indigo2 IMPACTs, courtesy of Silicon Graphics Industries

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alphas

The first look at tomorrow's best games

This month we've delved deep into PC territory and have come up with a few shiny nuggets. Activision's sharp-looking *HyperBlade* confronts the consoles with a possible blockbuster while Sierra's solid *Antara*, Scavenger's *Into the Shadows*, and Blizzard's *Pax Imperia 2* all promise to be solid games. Make sure to check page 78 for complete reviews.

46 Hyperblade PC

High speed in-line skating meets the 3D polygon arena in this new sports romp

50 Antara PC

One of the most popular adventure games of all time gets an updated look and feel

55 Pax Imperia 2 MACINTOSH

Blizzard steps out again to create what may be one very complex space game

58 Into The Shadows MULTI

An RPG with emphasis on action from the hottest new developers on the scene

60 Die Hard Trilogy MULTI

Virtua Cop receives its first real competition in this all-action shooter

64 Cyber Troopers ARCADE

Sega pays homage to Namco's *Cyber Sled* with its robotical one-on-one action title

66 Generations PC

Spectrum Holobyte proves that even big license titles can be good games

69 Lighthouse PC

Does this *Myst*-like game have what it takes to pull in an increasingly jaded consumer?

72 Stahlfeder PLAYSTATION

With a purse full of visual effects and nice graphics, this shooter may revive the genre

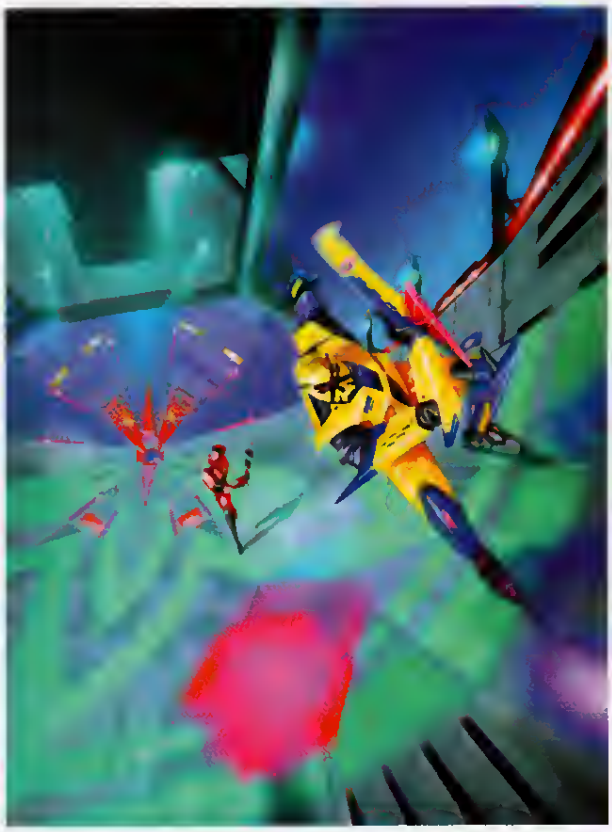
75 Subterrane PC

Swords, sorcery, and a futuristic storyline play out in a strange new role-playing saga

HyperBlade

Format:	**Windows 95**
Publisher:	**Activision**
Developer:	**Activision**
Release Date:	**spring**
Origin:	**US**

The PC is known for a lot of things in the game arena, but fast-action games that actually look good probably isn't one of them. With *HyperBlade*, Activision is hoping to change all that



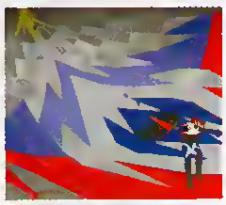
One of the reasons for not texturing the polygons of the arena was to save process cycles so that characters could be extremely detailed. Performing stunts is essential if you expect to get through with a winning season

think of *HyperBlade* as playing hockey on the inside of a zeppelin

Every once in a while, a game comes along on the PC that shows the potential of the system beyond war sims, trading games, and pixely first-person shooters.

HyperBlade looks to be one of those games. It combines true-to-life roller blade physics with a futuristic setting in an action sports title that should — if the company can tweak the gameplay out — challenge anything on the consoles for total action potential.

The basic action takes place in a 3D ellipticle arena — think of it as playing hockey on the inside of a zeppelin. The game is basically a high speed hockey match with three contestants on a side, a goalie or defenseman and two forwards. Interestingly, Activision has used mostly flat-shaded polygons for the arena and characters, versus the texture maps that have become ubiquitous over the past few months. "Part of it was an aesthetic decision," said Lewis Peterson, producer at Activision. "More importantly, a texture-mapped polygon costs about 10 times the processor budget of a flat- shaded polygon, so we had to make a decision as to whether or



Each arena has its own colors, obstacles, and sound effects

Brutalizing opposing players in an excellent strategy, especially since, á la *Rollerball*, there are no rules or player contact in the world *Hyperblade*

The high-speed pace of the game is truly stunning, and should make for an intense play experience. Even on a 486-66, the frame rate is high

There's a 16-game season with play-offs, a six game tourney, a single-game mode, a playoffs-only mode, and of course, hidden teams and arenas

not we wanted one big texture-mapped polygon, or a more detailed and fine-tuned characters." The end result is an almost retro-chic flat polygon look á la *Virtua Fighter* or *4D Boxing*.

The game features

standard sports options. There's a 16-game season with play-offs, a six game tournament, a single-game mode, a playoffs-only mode, and of course, hidden teams and arenas. There are 12 teams to start, including six from the US and Canada, one from the UK, Japan, Germany, Russia, and Poland. The actual physics of the game closely mimic superfast-paced rollerblading. Top ranked US and British rollerbladers were motion captured for all the animation, and consulted on gameplay. "Really, it's like *NBA Jam* on rollerblades," said Peterson.

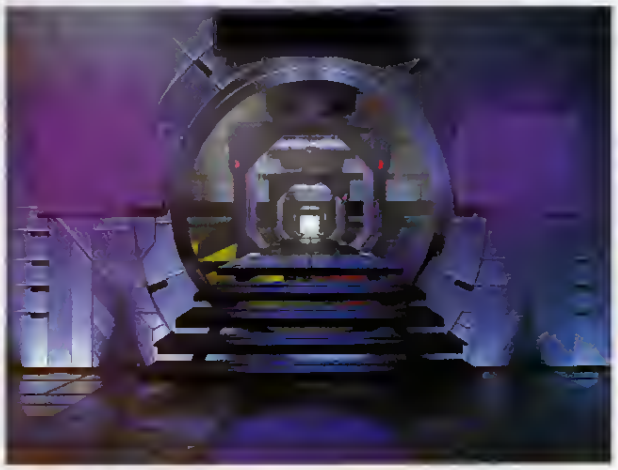
Each arena has a different color scheme, and, more importantly, different power-ups and obstacles, which include various ways to smash your opponents, like hurdles and turnstiles. There are ramps for tricks, 360s, flips, rail grindings, and more. The "aggro" skating style is used to outrun and avoid your opponents, but also to build up your own skills. Power-ups, like doubling the score of the next ball scored, or charging the ball so it can be thrown at your opponents to cause damage, are temporary, while greater stats earned by trick skating are permanent — at least until a player is too injured to continue. Luckily there is a bench from which substitutes can be drawn before injuries become permanent. There are also elements that will please any action sports fan: stats, realtime fighting, cheering (or booing) crowds, and high scores — an average score is in the 20s after a 15-minute game.

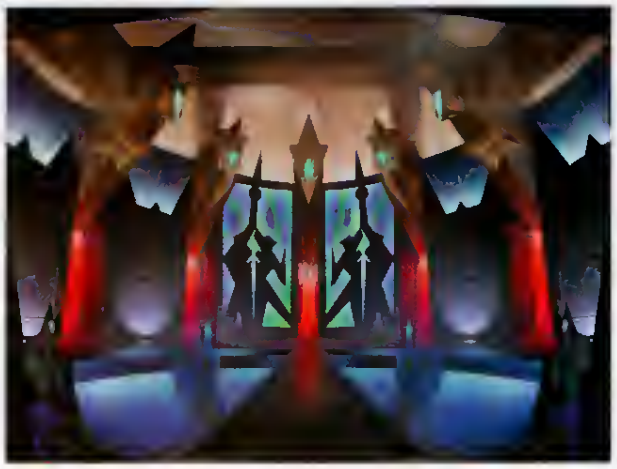
The game defaults to a second-person over-the-shoulder view, although a third-person moving camera is an option for two-player cooperative games. In early versions NEXT Generation played, the scrolling and

The motion of the players was captured from world-class roller bladers and adds a very realistic feel to the action in the game

ng alphas

Keeping your players healthy is essential to success; you have to have a pool of reserve players but their skill level is far below that of the starters





The graphics of the game maintain an extremely distant feel, in or out of the arena, this odd stylistic "cyber deco" looks create a bizarre feel

HyperBlade is one of the first games to truly take advantage of Windows 95's gaming software development kit

animation were smooth, and there was no visible draw-in or drop-out.

HyperBlade is one of the first games to truly take advantage of Windows 95's gaming software development kit, rather than just being compatible with the new operating system, and it shows — it will take advantage of 3D cards as they are released, for greater rendering speeds. The DirectPlay APIs were also used for network support. The game is four-player networkable over a LAN and supports head-to-head play across a modem (Activision reasons no one will want to play the goalies, although a six-player version was an early development idea). WAN support is planned if latency issues can be resolved.

At its most basic, *HyperBlade* is a very simple, fast-paced futuristic hocky-style game — a good one to be sure. Anyone who's ever played the Bitmap Brothers' *Speedball* or seen the movie *Rollerball* will clearly recognize *HyperBlade*'s antecedents. What makes it really stand out is that it's so clearly a console game, except for one thing — it's on the PC. Games like this, more than any Windows 95 press release, bears out Microsoft's claim about the potential of the PC as a gaming platform capable of handling any type of game. ng

Less-defined polygon models are substituted when characters are far away

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Antara

Format:	**PC**
Publisher:	**Sierra**
Developer:	**Sierra**
Release Date:	**September**
Origin:	**US**

Looking for a follow-up to its successful *Betrayal at Krondor*, Sierra tries to prove that it's the play, not the license, that makes a good game

While actual options haven't changed much from *Krondor*, the overall look is very different. The developers aimed to keep the original title's feel

Weapons will be more varied than in *Krondor*, hopefully including hacking and thrusting weapons in addition to sword use

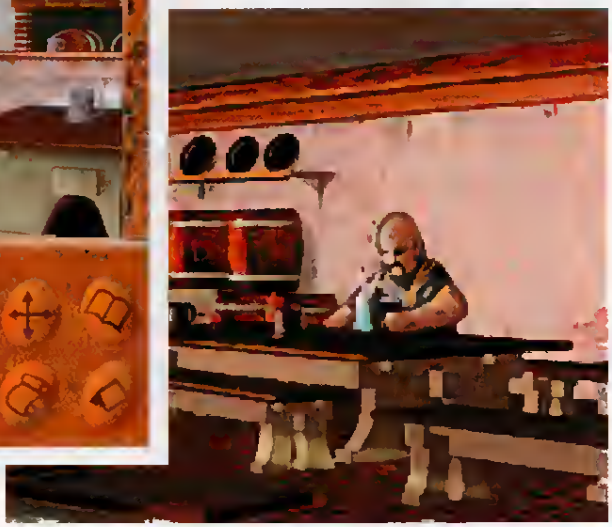
"I'm coming at the design from the perspective of a *Krondor* fan, because I'm one myself"
Peter Sarrett, designer

Every now and again, a company releases a game that's such a success even the people involved in the project are surprised. Insiders say that after selling back the *Riftwar* rights to Raymond Fiest due to poor disk sales, Sierra decided to re-release the game on CD-ROM. The results were spectacular: Sales went through the roof, and critics were calling the title the best RPG to ever ship for the PC.

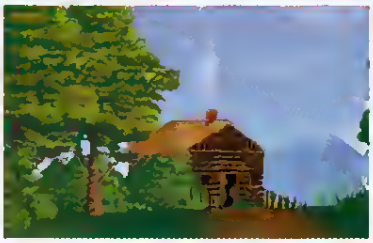
Although everyone loves a big hit, this left Sierra with a pretty big problem. The team wanted to do a sequel, but no longer had the rights to the *Riftwar* universe. The result was *Antara*, a game that looks and plays very, very closely to the original *Betrayal at Krondor*, but with a whole new set of characters and maps for players to explore.

One of the most important things that the all-new development team wanted to be sure to do was to keep the feel of the original title intact. As entertaining as the *Riftwar Saga* is, it wasn't so much the story itself as the easy play, unique interface, and chapter-based storyline. "The games are going to be very similar," says Peter Sarrett, the designer on the *Antara* project. "We're going to use a chapter format, which is one of the things I really liked about the original title. There will be

Better inside views and a sharp new interface add a lot to *Antara*'s feel. As in traditional lens, you eat here



Talking to the right people can make the difference between a long, dangerous journey and a short, safe one. Being nice never hurts



plenty of subquests, some of which will affect the plot, and some that won't," he explained. Some of these subquests will offer players items that will aid them with their main goal, but aren't necessary to the completion of the game. "I'm coming at the design from the perspective of a *Krondor* fan," continues Sarrett, "because I'm a fan myself, I want my game to have the same appeal for new gamers that *Krondor* had for me."

Even though the team wishes to stay as close as possible to the original formula, it is also working to improve facets of the game that weren't perfect the first time around. "We're definitely upping the ante," says Sarrett. "One of the biggest criticisms of *Krondor* was that the graphics weren't as well crafted as everyone though they should be." Antara will be displayed in full 640x480 with 256 colors. The team tried to create a very painted look that is rich enough to suck players in from the beginning, he added. To do this, the team is taking camera shots of different landscapes, and then it'll go back and touch them up with 3D tools to make the game's backgrounds look more like paintings. It's surprisingly effective, and produces an effective fantasy atmosphere.

The game itself has plenty of new elements, some of which are continuations on a theme from *Krondor* and some of which are all new. A new magic system will use a set of skills specific to different colleges of magic, and will give players who see a spell cast by someone else a chance of learning that spell. A new skill system will enable players to devote free time when camping to practicing their skills, in addition to the standard learn-as-you-do system used in *Krondor*. Brilliantly original magic items, like magic chains that disperse damage received equally through a party, and gems that spin around characters protecting them when invoked, are included.

In the end, *Antara* probably isn't going to step far outside the path of its predecessor. Even so, if *Antara* can deliver the same amount of challenge, ease of play, and depth that *Krondor* did, it will definitely be a game that can hold its own in the increasingly anemic adventure game genre. ng

A new magic system will use a set of skills specific to different colleges of magic

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Pax Imperia 2

Blizzard offers Macintosh users a deep and complex multiplayer space game based on the *Spaceward Ho!* style

One of the main complaints about the first version of *Pax* was its lack of graphics. Version 2 fixes this

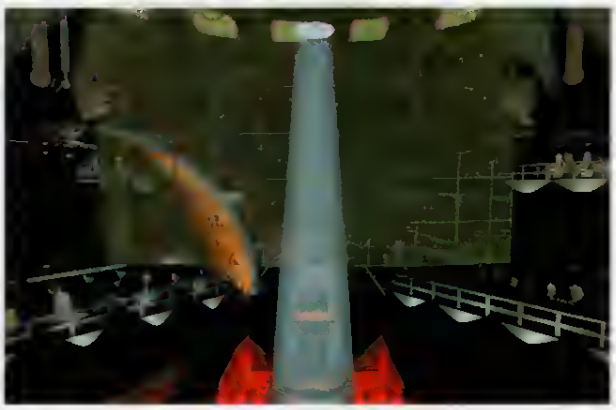
Format:	**Mac, Win 95**
Publisher:	**Blizzard**
Developer:	**Changeling**
Release Date:	**March**
Origin:	**US**

Every now and then a game comes out that has enough depth and long-term play value to withstand the crushing tide of obsolescence and remain on gamers' hard drives long after the graphics, sound, and interface technology are old hat. *Spaceward Ho!* and *Civilization* are good examples of this type of ultra-addictive gaming that moves titles out of the realm of being merely great and into the elite ranks of "classic" titles. Blizzard's newest strategy game, *Pax Imperia 2* has the potential to be there as well.

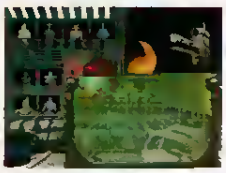
The relationship between Changeling and Blizzard means Windows users will be able to play this game for the first time

At its heart, *Pax Imperia 2* is a lot like *Spaceward Ho!* — players take the role of the head of a galactic empire, building a fleet to colonize and then defend a kingdom of planets. But where *Spaceward Ho!* was built for simplicity, *Pax Imperia 2* is built for absolute realism and richness of gameplay. More than just a resource gathering exercise, *Pax 2* will give players the option to conquer the galaxy through combat, diplomacy, economic savvy, or sheer political force. No way is the right way, and the options within the game seem limitless.

With 16-player network support, a random universe generator, and even the option to create your own alien races, *Pax Imperia 2* would stand as a solid title even with 16 color graphics, but the design team has gone the extra mile to ensure that the game will look and sound almost as good as it promises to play. Graphics are stunning, with colorful high-res graphics, and 3D rendered scenes. On the audio side the team has employed an innovative text-to-speech technology that enables the computer narration to accurately follow what's happening in the game rather than merely rattling off stock phrases.



This Senate-style room is the scene of important political machinations in your empire



Listening to your advisors isn't just a novel option, it's essential in a game of this complexity and breadth

This isn't going to be a game for everyone, even with the adjustable play options, but this title is easily one of the most complex games to ever ship for home computers. So for those who like their gameplay experience as deep as humanly possible, this game has the potential to keep you locked to your screen. ng

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THEY SAY ABSOLUTE BUT HEY, IT'S A HE

These are just three of the animators at Industrial Light & Magic who helped to create the 3D animations for *Jurassic Park*, *Jumanji*, *The Mask*, *Casper*, and more than there's room here to list. (Daniel Jeannette from the rhino, Tom Bertino riding Milo, Geoff Campbell on the raptor.)

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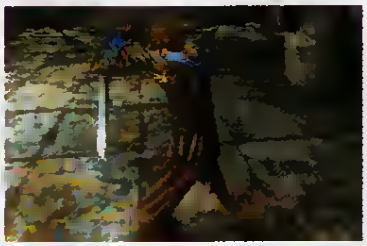
Into the Shadows

Format:	**PC CD-ROM**
Publisher:	**Scavenger**
Developer:	**Scavenger**
Origin:	**US**
Release Date:	**2nd Quarter**

As more developers embrace back-to-basics coding techniques, a team has been upping the coding ceiling for some time. With many eager publishers knocking on its doors, Scavenger talks to **NEXT Generation**



All of *Into the Shadows*' characters have been fully motion captured with the Polyhemus system, creating an unrivaled fluidity and realism

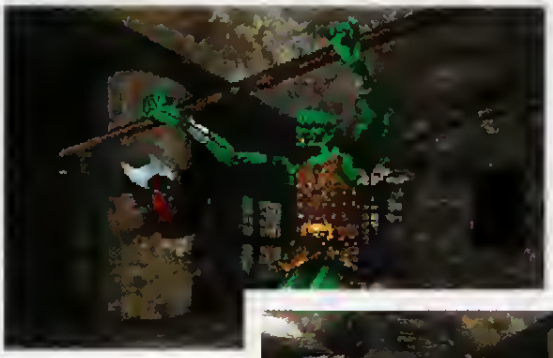
Scavenger's a programming entrepreneur attempting to trick every ounce of graphic ability out of the PC

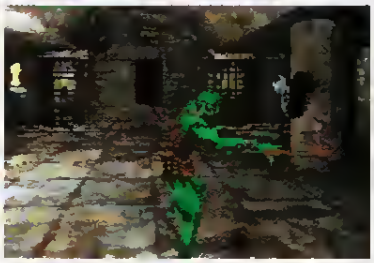
Now that 32-bit technology has slipped into the mainstream and software developers have had time to assess the abilities of each platform, it's hard to get excited over million color palettes and texture-mapped polygons. Luckily, several innovative companies exist who are already looking to the future and pushing hardware to the limits.

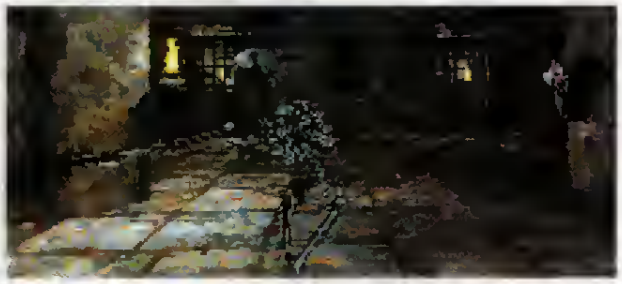
Scavenger is the Los Angeles, CA-based development company responsible for 16-bit Sega titles *Sub-Terrania* and *Red Zone*. The company's policy for never importing graphic technologies, instead developing their own, has already placed it in the NEXT Generation spotlight in the form of an extended alpha feature (**NG 11**). Now the company is in the limelight again. This time we provide a more detailed look at its innovative and somewhat crafty approach to PC graphics.

Into the Shadows is a D&D-style game with puzzles and maze-like locations, but with the emphasis placed firmly on action, and more specifically, fighting. It's a game that exhibits truly extraordinary graphic quality. The scenery is incredibly detailed and atmospheric with slimy dungeon walls and flaming torches that are crisp and beautifully drawn. Most impressive is the game's cast of characters: elves, wizards, etc. who look gorgeous and exhibit an unparalleled fluidity of motion — not an easy task with antiquated PC hardware.

The techniques involved are no more glamorous than the creative use of mathematics. Where other developers struggle to conform to the PC's primitive architecture and operate







***Into the Shadows* features amazing animation (above). The game will be transferred to Saturn and PlayStation**

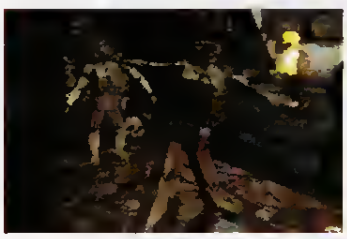
This skeleton warrior sways and lurches in an incredibly life-like manner. The shadows cast by the iron doors (top) detract from the PC's low res

Down in the Dungeon

Scavenger has chosen to exhibit its beloved editor in a suitably eerie environment. Dungeons and Dragons games have been around since the 8-bit days, but recently the genre has been dominated, if not hijacked completely, by Japanese RPGs in the *Zelda* style. To win players back to the *Dungeon Master* way of doing things, Daniel Small is seeking to create a believable scenario in which players can immerse themselves. In this respect, Scavenger is pushing the graphic engine as a means to accentuate the quality of the game, rather than make up for a lack of it: "We're really trying to meet the interest group that enjoys this type of Dungeons and Dragons fantasy and we're trying to remain faithful to that group, and provide the most realistic environment in which to play."

within its strict confines, Scavenger is a programming entrepreneur, attempting to trick every ounce of graphic ability out of the machine. As Daniel Small told NEXT Generation, "Every machine can do something it's not supposed to, and we have the tricks to exploit this." These graphic deceptions are used throughout *Into the Shadows* to fool both the player and, more intriguingly, the computer, into thinking incredibly complex things are happening on-screen, when in fact simpler things are taking place — they're just being aided by algorithmic tricks and short cuts.

Mikko Thatinen, one of the lead developers on the *Into the Shadows* (*ITS*) project, was willing to give NEXT Generation a few glimpses into the workings of the Triton graphics engine. *ITS* first captures the imagination with its brilliant animation.



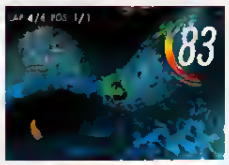
Good texturing and motion capture ensure that the characters look detailed and move convincingly

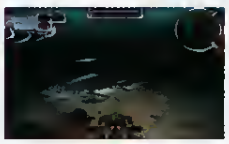
The characters are incredibly detailed, intricately animated figures, yet they're utilizing an anorexic 100 to 350 polygons. Thatinen explains this paradox with a furtive admission, "We utilize a doubling and transparency technique to give the appearance of more polygons."

The shadows cast by the characters provide another graphically impressive element. It looks as if they are formed from real shading affected by light sources within the game and, indeed, the shadows are calculated in realtime. Thatinen points out, however, there are limits to how much the PC can calculate, so alternative techniques are employed to make the effect appear real. The team has in essence used physics and complex algorithms to create "elegant short cuts."

At the heart of all this chicanery is a complex, state-of-the-art editor. "I've seen some editors that people show, but the tools we've developed to make the game are just as impressive as the work itself... it's very in-depth."

Reassuringly, gameplay is just as important to Scavenger as looks. As Daniel Small says, "The game that is all the rage at Scavenger at the moment is [Nintendo's] *Yoshi's Island*. We feel the graphics are unattractive, but the gameplay is so much fun. One day we would like to work with Mr. Miyamoto. He is truly a wizard." ng





***Scorcher* (top) and *Amok* (above) are perfect examples of Scavenger's dedication to ground-breaking graphics. Appearing on Saturn, both games feature fully depth-cued, light-sourced, z-buffered scenery**

Die Hard Trilogy

Movie games have a well-deserved, horrible, reputation. *Die Hard Trilogy* may help to change all that

Boom boom boom! Just like in the movies, *Die Hard Trilogy* is about speed, action, and massive explosions — not plot

Format:	**PlayStation, Saturn, PC**
Publisher:	**Fox Interactive**
Developer:	**Probe**
Release Date:	**May**
Origin:	**UK**

Fox has solved the dilemma of cramming three different movies into one game in an interesting fashion — there are actually three games on the disc, one for each movie. They are totally unrelated, except that saving your progress in one saves your progress in the other two. It's a cool concept, and guarantees a substantial amount of playtime, especially considering the company maintain each game is as long as other games released so far for PlayStation — a claim that anyone familiar with the disappointing length of early PlayStation titles should have no trouble believing.

The first game, *Die Hard*, is basically a 3/4-view *Crusader* clone, with you controlling Bruce Willis as he battles his way through Nakatomi Plaza in search of bombs, grenades, machine guns, shoes (of course), and terrorists.

Die Harder is a *Virtua Cop* rip-off with an impressive number of polygons flying around the screen at any given time. The Saturn version should be compatible with the Stunner, as well.

Die Hard with a Vengeance is a 3D car-chase-and-subway battle above and below the streets of New York as you quest to locate bombs before they explode. You can pick from 15 cars, from Yugos to Ferraris.

Although none of the games break any new ground in terms of design, all look extremely well done, with very smooth action and enough polygons to keep the graphics looking good.

By combining three proven methods of gameplay with extremely competent implementation, Fox Interactive should help both its own reputation and those of the notoriously bad movie license games in general.

Although none of the games break any new ground in terms of design, all seem extremely well done

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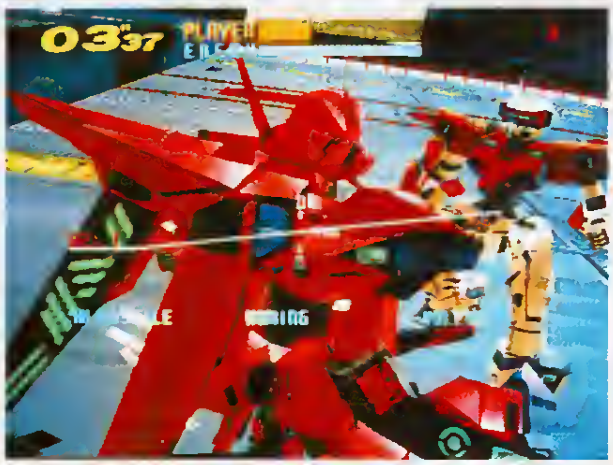
Cyber Troopers

Giving arch-rivals Namco a taste of its own copycat medicine, Sega AM3 delivers a hot new arcade game in the unmistakable style of *Cyber Sled*



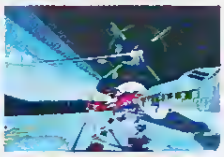
These insect-like characters are preparing for hand-to-hand combat. What differentiates them from past "bots" is their quick and agile abilities

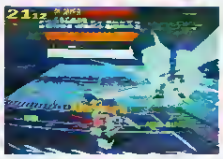
Format:	**Arcade**
Publisher:	**Sega**
Developer:	**Sega/AM3**
Release Date:	**Late March**
Origin:	**Japan**

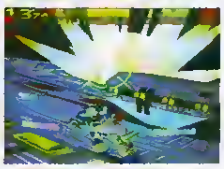
The battle for genre dominance between the mammoth Japanese arcade companies Sega and Namco has just grown fiercer with Sega's upcoming entry into the one-on-one action category.

Cyber Troopers (*Virtual On* in Japan) is, simply put, a nicely enhanced rendition of the popular Namco tank game *Cyber Sled*. Except AM3 has produced "improvements" as well as a game with agile flying robots, very different from *Cyber Sled*'s lumbering, earth-bound tanks. With a choice of eight characters, each including a set of three projectiles and hand-to-hand combat abilities, you fight one-on-one in a large enclosed arena against either the computer or another player, and control it with tank-like joysticks.

While the object is simple the means to winning are more strategic than they might initially seem. You're able to jettison into the air (by pulling the joysticks apart) to see where your opponent is, to attack, and, to a certain extent, escape. Using button combinations like pressing both the Trigger buttons or Trigger and Turbo buttons simultaneously, your character can pummel his opponent hand-to-hand, or he can employ homing missiles, napalm bombs, fireballs, phalanx, and other numerous weapons, many of which force him to hide behind stationary objects for defense. In fact, a key strategy is to use the Dash option, a fast linear sprint out of harm's way.







Homing in for the kill (top). Beware of multiple bombs (middle, above)

Character design is clean looking and varied, and because the characters move so fast, they often appeared jagged-edged and occasionally even blurry, something Sega hopefully will fix. Character design seems evenly varied: Bar-Bas-Bow is annoyingly slow but can take more hits than his opponents, while Temjin inflicts heavy damage in hand-to-hand combat but takes damage quickly.

Overall, the creation of flying robots instead of tanks and upping the graphic quality over its predecessor makes this game a free-wheeling romp sure to please action fans. ng

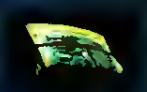
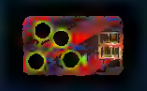
This character is avoiding the damaging homing missiles by using the rigid dash move. You can only run in a straight line

These guys are loaded

All eight characters are packed with three attacks, plus a special hand-to-hand move.

1. Temjin: This character inflicts heavy damage with his Beam Rifle.
2. Dorkas: Effective use of his Hammer up close.
3. Fei-Yen: Is capable of hyper mode when below half its energy.
4. Belgdor: Can deflect opponents missiles with his own projectiles.
5. Viper II: Confuses foe with jumping attack.
6. Bal-Bas-Bow: Confuses foe with both the Mine and Hand-bit.
7. Apharmd: Dangerous with the strange Tongfer.
8. Raiden: Makes good use of the laser when up close.

USE YOUR BRAIN... OR LOSE YOUR MIND!

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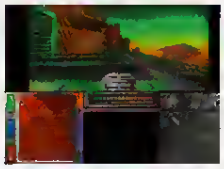
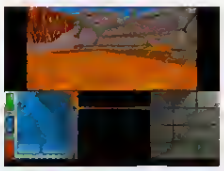
Star Trek: Generations

Spectrum Holobyte once again tackles the *Star Trek* license, this time with a game that is much more than just a sum of its parts





Texture-mapping enables Spectrum Holobyte to re-create the feel of a genuine *Star Trek* location — the hills outside LA

Format:	**PC**
Publisher:	**Spectrum Holobyte**
Developer:	**Spectrum Holobyte**
Release Date:	**Fourth quarter**
Origin:	**US**

The *Star Trek* license is so popular that a game that bears the name is almost guaranteed to succeed. *Generations* is an even hotter property than usual, as it has the advantage of featuring characters from both the original TV run and the cast of the *Star Trek: The Next Generation* series. With a sales success almost guaranteed, it would be easy for the design team to rush out a title counting on the license to carry it through, but fortunately it seems that the developers at Spectrum Holobyte have added enough gameplay and special effects options to ensure that its newest title, *Star Trek: Generations* is a game capable of standing on its own merits.

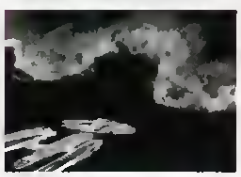
In the beginning of the game, the storyline is much the same as the movie. Dr. Soren is trying to reclaim happiness at the expense of millions of lives. You and the rest of the Next Generation crew are supposed to try and stop him before things get out of hand. Therein lies the strength of the game. Players are not forced to do anything at all. If you choose, you can take control of the *Enterprise* and go on a four month mission to seek out strange new breakfast locations...or at least until the good doctor destroys your home.

It's like *Doom*, but with a phaser (set to kill, presumably). No more "getting in touch with your feminine side", à la Councillor Troy — it's time to kill

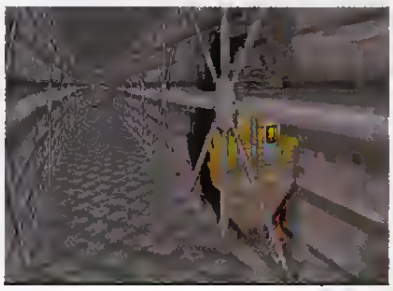
Simon Ffinch, the producer on the project, explains the theory behind the open storytelling style: "We were trying to put the player into the situation that the characters were in the movie *Generations*, but we wanted to let them do what they wanted to do, and have the situations deviate fairly far from the film." This deviation can take

"We've combined elements from action, adventure, and some of the most popular RPGs"

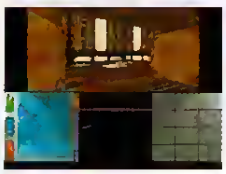
Simon Ffinch Spectrum Holobyte



No *Star Trek* game would be complete without the inevitable face-off with an enemy presence. As per usual, the *Enterprise* will prevail if the correct mix of aggression, diplomacy, and "giving her more until she almost blows" is found



Ever wanted to stride briskly down a corridor before saving the universe? Now you can. God forbid you should need a bathroom



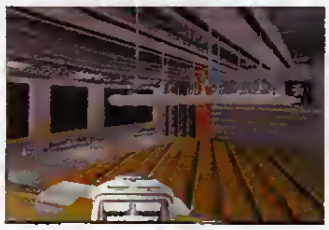
Captain's Log. Stardate 86709. I'm bald. Damnit

place on a grand level, such as flying away from the situation all together, or on a more subtle level, such as using deadly techniques on the enemies that you come in contact with. "We definitely wanted to teach players that violence isn't always the right solution, but we never wanted to water down gameplay by taking that option away from them," said Ffinch. "We've combined elements from action, adventure, and some of the most popular RPGs, with an RPG-type interface that allows for a lot more complex interaction that what you'd expect," he adds.

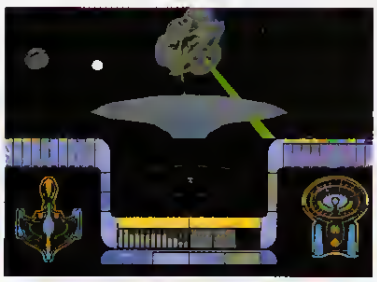
In order to get through the game, players will have to master several different sets of skills, from *Doom*-style shooting in the action sequences, to space-combat strategy in the flight sequences, and even diplomacy and detective work in the adventure segments. Although it's too early to call, it's hard to see how gameplay this diverse will be anything but entertaining in a final run.

Graphics and sound are truly phenomenal, and obviously have been based in part on technology that was acquired during the making of the *Star Trek: A Final Unity* project. The space combat sequences uses a full 640x480 resolution running with 16-bit hi-color that is capable of displaying up to 65,535 colors simultaneously. In action sequences, the game uses the same resolution, but drops down to standard 256 color mode. All of the game's interfaces are designed to not only play well, but to further pull players into the *Star Trek* universe by mimicking the computer designs used in both the film and the "Next Generation" television show. According to Ffinch, the game will also feature the voices from all of the original actors of the series, as well as a solid soundtrack for background music.

All in all, the addition of another *Star Trek* game to the PC shelves isn't really all that much to get excited about, but *Generations* holds the promise to be much more than that. With the very latest graphics, realistic sound effects, multiple gameplay elements, and an open script, this title should be able to stand on its own. This is one for fans of the series and those just looking for a good time. ng



Scenes sach as these will immerse players into a strangely violent *Star Trek* universe waiting to be explored



Space combat requires tactics, steel nerves, and a fast ensign on the photon torpedoes

Players will have to master *Doom*-style shooting, space-combat strategy, and even diplomacy and detective work

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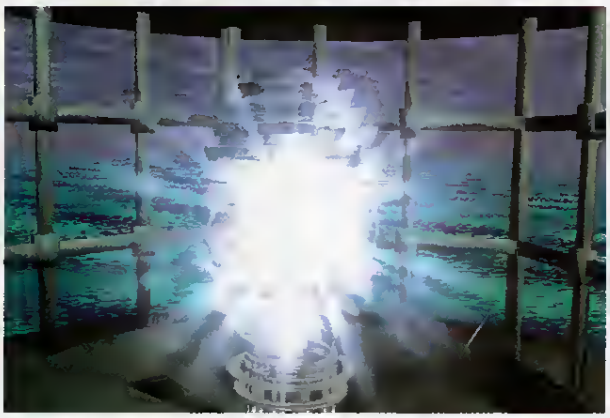
Lighthouse

Can *Lighthouse* capture the giant *Myst* market?



The lighthouse is a nexus between our world and a dimension where most gameplay occurs — where you'll discover the answers to your questions

Format:	**PC CD-ROM**
Publisher:	**Sierra**
Developer:	**Sierra**
Release Date:	**May**
Origin:	**US**

The subtle beauty of the world of *Lighthouse* is readily apparent in this fog enshrouded shot. The rest of the game promises the same seamless beauty

Nevermind the first word that comes to mind when you see this will be *MYST*

The success of *MYST* has shown there is a market for leisurely paced, nonviolent, intellectual adventure games. And *Lighthouse* certainly seems aimed at the audience that made *MYST* such a hit. Despite being derivative in concept, Sierra hopes to offer enough innovation with *Lighthouse* to keep it from being a strictly "me-too" product.

The game is set partially in our world, but mainly in a fantasy setting. At the beginning, your character is frantically summoned by an old friend, the eccentric physicist, Dr. Jeremiah Kirk, to come to his home and laboratory (located in an old lighthouse) to watch his daughter, Amanda. When you arrive, the doctor is missing and before long, his daughter is gone, too — snatched through a portal to another dimension by a mysterious figure. You leap through the portal after her and into a strange world. Who was the dark being who took Amanda? Where is Dr. Kirk? These are the questions you'll answer as you work through the game.

"The game is very art-oriented, but we're also stressing story, quality, and playability," said Jonathon Bock, lead designer and art director. "The game is very *MYST*-like, but there are some key differences." Notably, there is a lot more character interaction, with 3D characters. There are also some realtime sequences, like when you pilot a submarine pod. But what should excite gamers the most are the puzzles.

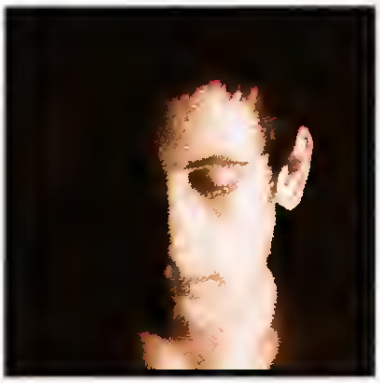
One of the most promising elements of the game is the alternate world. This seems like a place where you'd like to spend a lot of time. "It's a place where they probably had a high technology level and then they had a collapse, what they've ended up with is a culture that appreciates craftsmanship and handling technology with care," said Bock.

Nevermind the first word that comes to mind when you see this will be *MYST*. It looks to offer enough innovation, especially in that it actually features enticing gameplay, to set it ahead of the pack.

ng

The influence of *MYST* is obvious in the art and control but not (thank god) the puzzles

Every day, nearly twenty



report having

In 1996, that number will increase

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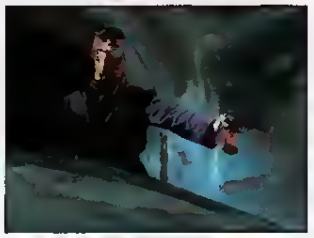
Americans

a near-death experience.

dramatically.



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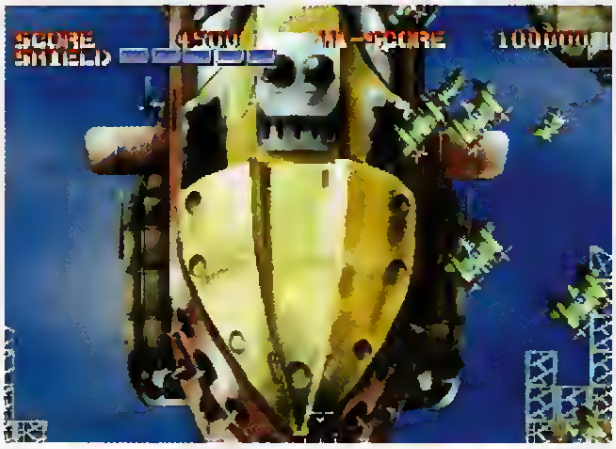
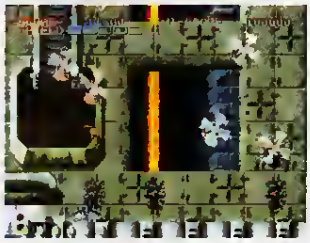
Stahlfeder

The vertically scrolling shoot 'em up seems to be enjoying an almost cryogenic-like immortality. The latest 32-bit blaster is a visual orgy of effects





Stahlfeder tries to add some spice to the hackneyed shoot-'em-up genre by including interactive scenery that impedes your progress, and some lovely texture-mapped 3D enemies. These features may sound more familiar, however — four planes to fly with bombs, power-ups, and shields. Hmm...

Not only does the scenery look gorgeous, it also plays an integral part in the game

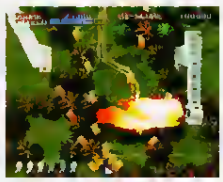
Format:	**PlayStation**
Publisher:	**Santos**
Developer:	**Santos**
Release Date:	**Out now (Jap)**
Origin:	**Japan**

The vertically scrolling shoot 'em up has long been a videogame cliché. Big power-ups, predictable waves of aliens, and overused formulae often mean new releases are virtually indistinguishable.

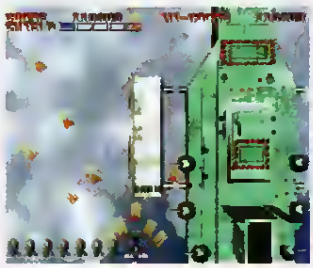
Stahlfeder, from newcomer Santos, follows the same old routine of bombs, power-ups, and end-of-level bosses, but this time the PlayStation's graphics capabilities have been used to add depth to the gameplay and visuals.

First, the backgrounds take full advantage of the PlayStation's color palette, including detailed texture and lighting effects. And the scenery also plays an integral part in the game, with factories and windpumps interfering with the player's blasting. Further, most of the end-level bosses are 3D polygon creations rendered on the fly. By comparison, even Seibu's manic *Raiden II* looks dreadfully flat.

But there are some drawbacks. There is no two-player option and NEXT Generation's development disc only had four levels. Having said that, *Stahlfeder* promises to be another spectacular game to add to PlayStation's ever-growing list of quality titles. ng



In some areas, *Stahlfeder* looks remarkably similar to other vertically scrolling shooters like *Raiden*, but the use of PlayStation's 3D capabilities will hopefully produce an original title rather than the same old rehashed formula



As with most vertical scrollers these days, *Stahlfeder* enables the player to fully destroy practically all of the landscape. Trees burn, grass gets scorched, and buildings explode, all at the whim of an over-excited trigger finger. There's little original about *Stahlfeder*, nonetheless it's all executed well and produces beautiful backgrounds as well as superb animation

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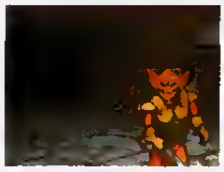
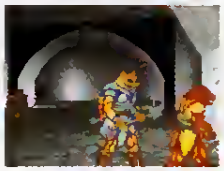
Subterrane

New World Computing returns to the fantasy realm, this time with an interface and plotline straight out of the future

The hordes of stubby, red-eyed foes are a disarming obstacle if only because of their sheer numbers





Various enemies present a series of troubles when they appear out of nowhere. Occasionally the massive numbers dwindle to just a few

Format:	PC
Publisher:	New World Computing
Developer:	New World Computing
Release Date:	March
Origin:	US

New World Computing has been famous for years as the creators of the Might and Magic role-playing series, and more recently for the creation of its surprise strategy hit *Heroes of Might and Magic*, based on that same world. And even though development continues on sequels to the popular series, it seems that the company is now looking to use its RPG skills to begin moving into other genres.

In its latest title *Subterrane* New World Computing is trying to recreate the excitement of multiplayer pen-and-paper role-playing games in the computer medium, but with a relaxed play atmosphere that could introduce new gamers to the RPG experience.

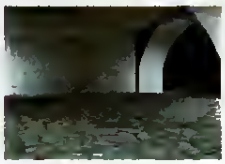
Subterrane's story deviates from the standard swords-and-sorcery tale by starting players in a futuristic world above ground. During the intro animation, players will watch as their characters delve into a set of underground caverns on an exploratory trip, only to find themselves trapped far beneath the surface with no way home. As the tale unfolds, the team finds that the only way forward is to go farther down, and that the land below is anything but friendly to uninvited guests.

Using a null modem cable for two-player mode, or by hooking up a network for up to four, characters can fight alongside each other, and unlike other first-person action-oriented games, teamwork is encouraged, and in many cases it's simply necessary.

A slew of companies are trying to move the RPG into a more action-oriented and visually intriguing direction —a good way to exploit another strong asset of the RPG — but they all seem to be leaving out the player-to-player — the human — interaction that's the main reason pen-and-paper RPGs have succeeded so well in the past.

Although it's still too early to tell whether *Subterrane* will be able to do what the others haven't, from the looks of things, it's definitely a strong step in the right direction.

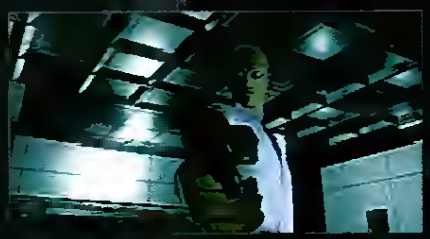
***Subterrane* deviates from the standard swords-and-sorcery tale by starting players in a futuristic world above ground**



The dark hallways and underground paths rarely, if ever, lead upward...

Solving the Mystery means Visiting the Dark Pit of your Soul.

"NEW GENRE OF INTERACTIVE HORROR!"
–GAME FAN



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Acclaim

NHL Face Off PlayStation **ThunderStrike 2** Saturn **Toshinden Remix** Saturn **Starfighter** 3DO **Mission Critical** PC **Rebel Assault II** PC **Warcraft 2: Tides of Darkness** PC **The Dig** PC **Revolution X** Super NES

finals

The final say on the newest titles

78	PlayStation
79	Saturn
84	3DO
86	Jaguar
87	Virtual Boy
87	PC
95	Macintosh
96	Genesis
96	Super NES
96	Arcade
96	Neo-Geo
96	Sega CD
96	Sega 32X

Strange things are happening all over the industry — scores of PC games are plunking down in every style and genre — the Super NES' and Genesis lifespans are winding down, and Saturn games are proving to be some of the highest quality in the 32-bit race. See below for detailed ratings

★★★★★ **Revolutionary**
Brilliantly conceived and flawlessly executed; a new high-water mark.

★★★★ **Excellent**
A high-quality and inventive new game. Either a step forward for an existing genre, or a successful attempt at creating a new one.

★★★ **Good**
A solid and competitive example of an established game style.

★★ **Average**
Perhaps competent; certainly uninspired

★ **Bad**
Crucially flawed in design or application.

PlayStation

Doom
Publisher: Williams
Developer: GT Interactive/Id Software

Here we go again. It's fair to say that, bar none, this is the best version of *Doom* yet for any home console, putting previous efforts for 32X, Jaguar, and especially Super NES, to shame. The high frame rate, impressive light-sourcing effects, and responsive controls make this a treat for the eyes and fingers.

The game supports the PlayStation Link Cable, so two players with two copies of the game, two TVs, and two PlayStations can go head-to- head in a death-match, the disc also includes not only a complete port of *Doom II*, but also a "new" version of the original *Doom*, *Ultimate Doom*, enhanced to make use of the PlayStation's polygon engine and throwing in Chain Gunners, Revenants, and other enemies, from the sequel.

While this spices up a game that, by now, everyone who's even remotely interested has already played, the net effect is to make *Ultimate Doom* and *Doom II* seem like one long game rather than two separate ones. Also, for some reason the walls seem especially "sticky," and it's easy to get hung up, particularly going around corners, but in the end, the only bad thing you can say is that this is getting really old. Sure, this is the best version we've seen yet for any home console, and for the two people reading this who've never played it, you're in for a thrill. The rest of us are getting tired, and next time we see it we won't be so charitable.
Rating: ★★★★

Gex
Publisher: Crystal Dynamics
Developer: Crystal Dynamics

That wise-crackin' gecko, having traitorously left the 3DO behind (where, presumably, he was supposed to evolve into the system's mascot), has now come to roost on PlayStation.

PlayStation

HAT TRICK

NHL Face Off
Publisher: Sony Interactive
Developer: Sony Interactive

NHL Face Off takes all the qualities that made EA sports' NHL series so good on Genesis and adds everything that makes 32-bit games so special.

The 3D arena is made to perfection, complete with reflections on the ice and rotating advertisements along the boards. Each team's uniform is done with unequaled detail. The inclusion of one-timers, four different types of checks, slap shots, drop passes, every NHL player and team, statistical tracking, and great artificial intelligence give *NHL Face Off* all of the great gameplay elements that make *NHL '96* so good. Throw in CD quality sound, three different camera angles, and some unbelievable graphics, and you have a new challenger for Lord Stanley's Cup.

The gameplay isn't as solid or as easy to control as *NHL '96* (Genesis), but *NHL Face Off*'s strength in graphics and sound is far superior. The only disappointment in *NHL Face Off* is the lack of players' numbers on their jerseys; with that one addition, *Face Off* would look so real you'd swear you were watching an NHL telecast.

Overall, *NHL Face Off* is exactly the kind of 32-bit hockey experience you'd expect and want.
Rating: ★★★★★

Sony seems to have improved on EA's model: The detailed uniforms, slick rink, and beautifully motion-captured players all come together with near perfection in *NHL Face Off*

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This is exactly the same game as the 3DO version, with no improvements to speak of, but it has to be said it's still one of the more inventive side-scrolling action games available. Thanks to his reptilian suction cups, Gex can stick to all kinds of surfaces, which enables him to do a lot of strange tricks and adds an interesting (if not completely unique) dimension to gameplay.

The game's five areas, each based around a different TV/movie stereotype — a horror level, a kung-fu level, a science fiction level, etc. — are unique and humorous, and there's plenty of hidden areas and bonus levels to dig out. Gex himself is voiced over by actor/comedian/"Saturday Night Live" flunky Dana Gould, and a lot of what he says is genuinely funny, which makes the whole exercise relatively painless.

In a world of polygons, we're not sure one last side-scroller is what the 32-bit universe needs, but you could do worse.
Rating: ★★★

Jupiter Strike
Publisher: Acclaim
Developer: Taito

Acclaim has reached an exclusive deal with the financially sagging Taito to distribute its products here in the US. Based on this agreement is the first game to be picked up through that deal, let's just hope that Acclaim didn't shell out too much.

A track-based shooter of the worst sort, *Jupiter Strike* is noteworthy strictly for having almost no good qualities at all. A relatively enjoyable intro sequence segues to a game with jerky control and uninspired, blocky enemy designs. You have a choice between two views: a third-person, behind-the-ship view which enables you see a lot of the surrounding area but effectively blocks your view of oncoming enemies, or a first-person perspective, which enables you see what's in front but kills any peripheral vision. Your weapons are limited to exactly two — a regular laser and a "locking" laser — and there's never a way to upgrade and *no* power-ups. The sound can be singled out for special derision, as it barely sounds better than the 8-bit shooters of yore.

It may be worth pointing out here that if a company is in trouble, there's probably a reason for it. Stay away, don't add their problems to your own.
Rating: ★

Ridge Racer Revolution
Publisher: Namco
Developer: Namco

The original *Ridge Racer* was a rush job, shunted out the door in the space of six months so it would be ready for the PlayStation's release in Japan. As such, it was an impressive effort, but clearly lacking in graphic quality, and the way the cars handled (even mild applications of the brakes yield ridiculous fishtailing). It sold well though, and has its adherents.

Considering that Sega had similar, rush job troubles with Saturn's *Virtua Fighter*, then rectified the problem with the incredible *VF Remix* a few months later, one might have thought Namco would be doing something similar with *Ridge Racer Revolution*. Such is not that case. Namco has simply released a disc with a new track, using the same flawed game engine. The track has been designed so that less of it is visible, which reduces the apparent amount of draw-in, but there are no new cars and, consistent with the structure of the original, you're still only getting *one* track. Higher difficulty levels simply add additional, more challenging extensions. Had this been released as an expansion disk at a reduced price it would be worth it, but it's being released at full price and billed as a practical sequel, which it isn't.

Anyone who loved the original will enjoy this follow-up, but be aware, you're a half-step away from being conned.
Rating: ★★

Shockwave Assault
Publisher: Electronic Arts
Developer: EA Studios

The original *Shock Wave* was an early "must have" title for 3DO — not that it was really that good, but compared to other 3DO games at the time, it was one of the best available. For the most part, this is a straight 3DO port, and includes not only the original *Shockwave*, but also the *Operation Jumpgate* expansion disc. It does take full advantage of the Sony's polygon engine, moving noticeably smoother and responding very well. On the other hand, it's still pretty boring, at least right up until the point where it becomes utterly too difficult to get any farther.

To keep your flagging interest up, there's plenty of full-motion video sprinkled into the game, both between stages and during stages, appearing on a small window inside the cockpit. From a technical standpoint, this is actually the game's most impressive feature, since the video runs while the game continues, and never stops the action or even slows it down. Each of the game's 15 levels is theoretically based on aerial photographs of the Earth and Moon, although it's remarkable just how much the levels look the same. Some levels use desert textures while others use jungle textures, but you'd be hard pressed to tell how that's supposed to affect the way it plays. The Dolby Surround that's cropping up on a lot of discs lately makes everything sound good, but there are few other points of interest, and with *Shockwave 2* just around the corner, the whole game is nearly redundant.
Rating: ★★

Saturn

Galactic Attack
Publisher: Acclaim
Developer: Taito

Though it would be foolish to recommend a game like *Galactic Attack* to anyone but a die-hard shooter fan, it is safe to say that this is more than just another filler game to satisfy the shooter jones. Aside from the fact that *Galactic Attack* is a super-fast action game,

Saturn

Battling other helicopters is the toughest aspects of *ThunderStrike 2*, but also one of the most exciting

STORMING

ThunderStrike 2
Publisher: US Gold
Developer: Core

The follow-up effort to the original *ThunderStrike* on Sega CD has seen the Core development team take an already great game and make it exceptional. *ThunderStrike 2* takes full advantage of Saturn's 3D capabilities by offering 360° free flight, rotating camera views, polygonal enemies both large and small, and a wide variety of texture-mapped, polygonal terrains including both land and water missions. The most exciting aspect, however, is the near seamless integration of the aforementioned attributes in one action-packed attack helicopter game.

Outside of a fairly significant problem with late draw-in, *ThunderStrike 2* is a near flawless operation and quite simply, one hell of an action game. The action is highlighted by a uniquely varied list of mission objectives and a fluid sense of control over the high-tech helicopter featured in the game. Other notables include a long list of available artillery, gorgeous 3D graphics, built-in mip-mapping, and the ability to make things explode into giant balls of flame.

ThunderStrike 2 also shows the developers' innovative thinking in the use of a 2D graphic underlay which mimics the 3D terrain until the polygons have a chance to draw-in. Unfortunately, the drew-in happens a little later than it should and the 2D alias isn't enough to hide it entirely.

Still probably the best third-party game to hit the Saturn yet, *ThunderStrike 2* is a valuable part of the Sega Saturn library and a must-have for all action fans.
Rating: ★★★★

rating saturn

Saturn

SECOND BEST

Battle Arena Toshinden Remix
Publisher: Sega Japan
Developer: Tokera

It was Sony's signature title upon release of PlayStation in the US and it gave Sony a mascot for their older-teen-focused advertising (Sofia says: bark like a dog!). Most importantly, however, it was the game that made many people look at the original *Virtua Fighter* on Saturn and then buy a PlayStation. Now, less than six months after its PlayStation debut, *Toshinden* is available (in Japan, at least) for Saturn.

Having *Toshinden*, an awesome 3D fighting game, on Saturn, especially with an extra boss and added cinematics, would seem to have been the ultimate reality check for Sony, except for one thing — it just doesn't look as good on Saturn. The gameplay is just as good as the original and the graphics aren't so far off that you won't want to play it, but there is a graphic downgrade evident in the characters and backgrounds. There is, in fact, such a difference that Sega of America has the project in development to bring it up to speed before its US release.

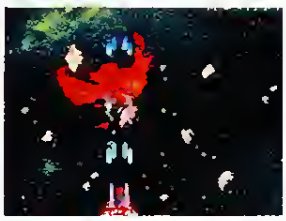
For all Saturn owners just dying to get *Toshinden*, there's still plenty of fun to be had, but if you've waited this long, you can surely wait for the upgraded US release.
Rating: ★★★

The cinema screens at the beginning of the game are a nice added detail to the Saturn version (top). With the same gameplay that made it a smash-hit for PlayStation, Saturn owners are sure to appreciate the game's undeniable charm

there is a definite feeling of quality development and several elements of smart game techniques that are displayed with this title. The best part about *Galactic Attack*, however, is that it offers everything a good space shooter should without any problems that may have shown up on a 16-bit system trying to do the same.

Essentially, the advantage to developing a relatively simple overhead shooter like *Galactic Attack* on a high-powered system like Saturn is that you don't have to make any compromises with it, which means no slow-down, even when a load of sprites are on the screen at once.

So, it comes down to this — if you like space shooters, you're gonna love *Galactic Attack*
Rating: ★★★



With the near countless number of enemies in *Galactic Attack* you'll appreciate its fast pace

Johnny Bazookatone
Publisher: US Gold
Developer: US Gold

While it's tempting to swear-off the side-scrolling action game as a by-gone product of the 16-bit era, there's something devilishly tempting about a game that looks and plays as good as *Johnny Bazookatone*.

Make no mistake, the gameplay is all pretty standard stuff (run from left to right and shoot everything that gets in your way), but what the title lacks in innovative thinking it starts to make up for in quality design. Showing off the Saturn's color palette and the speed at which the machine is capable of operating, *Johnny Bazookatone* fares quite well on the next-generation console and if the focus of the gaming industry was not shifting so definitively to 3D gaming, this game would, no doubt, be turning some heads.

In the end, *Johnny Bazookatone* is a fun game with awesome graphics and some clever little surprises along the way, but it is still highly reminiscent of a different, and rapidly fading, era in gaming.
Rating: ★★★

Wing Arms
Publisher: Sega
Developer: Sega

While most air combat games are eager to offer high-tech wonders such as locking missiles and jet engines, *Wing Arms* has taken a different route all together. In this WWII-style flight game, the locking missiles have been replaced by straight-shooting rockets and the most effective weapons are your mounted guns.

Creating more of an old-school dog fighting atmosphere, this scaling-down of the high-tech gadgetry changes the dynamic of the game quite a bit from what you may be used to.

***Wing Arms* features many visually exciting missions**

Definitely not a strict flight-sim, *Wing Arms* is more of an arcade experience than anything else, but you will be able to call on several genuine flight techniques including the ever-popular roll. The biggest drawback to this game, outside of the occasional problem with polygon draw-in, is in the fact that there are only six missions and with just a little bit of practice you'll have this one beaten before you're ready for it to be over.

Even so, you're likely to have quite a bit of fun along the way, as the action is fast, the graphics are beautiful, and the control is a joy.
Rating: ★★★

X-Men: Children of the Atom
Publisher: Capcom (Japan)
Developer: Capcom

If there's one thing that's proven, it's that familiarity sells. This is, no doubt, the theory behind the 2D fighter. Historically speaking, *X-Men: Children of the Atom* is nothing more than another name added to a ridiculously long list of games in very much the same vein. Strangely enough, this game somehow manages to distinguish itself as slightly beyond the reach of the countless other 2D fighters already in existence.

Character recognition of the X-Men adds to the experience, and the fact that *Children of the Atom* did well in the arcade also lends credibility to the title, but beyond these obvious factors this title still stands out.

Perhaps it's the smooth animation combined with the brightly colored graphics, or the differences in character strengths and weaknesses, or maybe it's just time for another good 2D fighter, but whatever it is, *X-Men: Children of the Atom* has a definite spark that's missing in other similar titles.
Rating: ★★★

The X-men's name recognition and the nearly arcade-perfect fighting make *Children* likeable

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US GOLD

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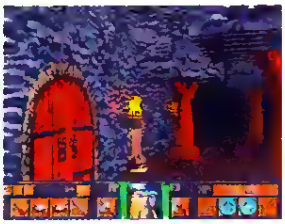
rating 3DO

3DO

Deathkeep
Publisher: SSI
Developer: Lion Entertainment
Like its predecessor, *Slayer* (also from SSI) *Deathkeep* is a mix of *Doom*-style action and AD&D-based RPG, although the emphasis is clearly on the action side. On the technical side, it moves along well enough, not as smoothly as *Wolfenstein 3-D* for 3DO, but the texture maps for the walls and floor are glossy and solid, and become increasingly better-looking as you continue through 25 different dungeons.



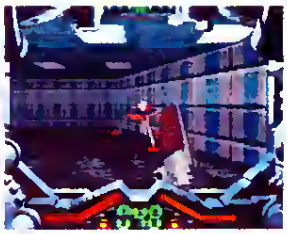
Overlooking character control, *Deathkeep* is a nice challenge

After sitting through the introduction, which consists of some of the least convincing 3D character animation you can imagine, you have a choice between three different character classes: a dwarf fighter, a half-elf fighter/mage, and purely elven mage. The dwarf, naturally, can't use spells, but the dungeons are so lethal — even the very first one — that only the dwarf has any chance of survival in the hands of a beginner player.

The game is extremely challenging and surprisingly complex, but its major flaw is in the area of player control. It's difficult, if not outright impossible, to stop yourself exactly where you want to, either when moving forward or turning, which makes hitting enemies with missile weapons and spells more of a chore than it should be. The game also has some trouble in enabling you to pick up objects consistently, and you often have to pass over things several times before it registers.
While these aren't minor problems, the dungeons are ingeniously designed, the game is huge, and on the whole, it's interesting enough to warrant a look in spite of the annoyances.
Rating: ★★★

Iron Angel of the Apocalypse: The Return
Publisher: Synergy
Developer: Synergy
The original *Iron Angel* was notable less for its gameplay than for the weird, psychedelic visuals that surrounded it. For the most part, the game was just a medium grade *Doom* clone, but the intro sequence, cut scenes, and enemies were so odd that you kept playing in spite of yourself just to see what new bit of strangeness came next.

For the sequel, the action is more straightforward, and also occasionally varies from the *Doom* mold, throwing in the odd driving and shooter stages, and there's been some mild attempts to enhance gameplay, with improvements in how smoothly it moves and controls.



Aiming for the masses, *Iron Angel: the Return* loses its trippy soul

However, it's clear that in aiming for a more mainstream approach, a lot of uniqueness has been lost, symptomized by the decision to dub the Japanese dialog rather than to have it subtitled, as in the original (a touch that only served to underscore its dreamlike quality). The job is nearly as goofy as any "Ultraman" episode, punctuated by an annoying, cute robot named Robbie who floats in and out to state the obvious and move the "story" along. Not only are the cut-scenes less interesting, but

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for some strange reason there's no way to even skip them. You're forced to watch even if you've played that section before.

Having sacrificed a lot of the more bizarre elements that made tha original worth playing, the sequel simply doesn't offer enough improvements to make up for the loss.

Rating: ★★

Scramble Cobra

Publisher: Panasonic
Developer: Genki/Pack-in Video

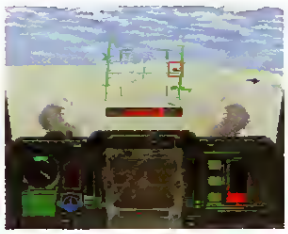
After *Thunderstrike 2* for Saturn and the upcoming *Gunship 2000* for PlayStation, it looks as if *Scramble Cobra* would like to be 300's entry into the field of 32-bit assault helicopter games. But this isn't good news for 3DO owners.

The game presents you with a paltry 10 missions — not 10 mission areas, simply 10 missions. And while there are three difficulty settings, that doesn't up the replay value by much. Control, while not exactly intuitive, is responsive enough. Oddly though, there's no way to change your chopper's altitude, so there's no chance of doing something silly like running into the ground or a hillside.

In fact, the game has few strong suits to play: the pace is slow, and there's a noticeable amount of draw-in at the horizon, in spite of the fact that very few missions take place over a particularly dense or complicated terrain. There are few weapons available, and the main gun is nearly useless, but that's not a problem as few missions provide much challenge in the first place (other than the fact that most missions must be completed in a certain amount of time, and failure to do so results in having to play it over again).

Add to this one of the most annoying and least commanding commanders ever seen in an FMV cut-scene, and you have an overall experience that isn't even bad enough to be painful, just dull.

Rating: ★★



***Cobra Scramble* is one of the poorest assault chopper games available for a 32-bit system**

Jaguar

Ruiner Pinball

Publisher: Atari
Developer: Atari

The key to making a great video pinball game is in convincing the player that he or she is playing a real pinball game with accurate physics and smooth animation. Once the suspension of disbelief is firmly in place, that's the time to introduce the bells and whistles.

Ruiner Pinball unfortunately misses the mark on the realistic pinball experience by just enough to make it tough to forget you're playing a videogame. The title's animation could only be described as rigid and there are some questionable physics that come into play from time to time.

What *Ruiner Pinball* does well, however, is in the bells and whistles part of the formula. With a couple of multiple-tier tables there's plenty of creative pinball action to master and, for the most part, it's an enjoyable process to do so. After all, there are unique opportunities in making video pinball games such as the ability to make multiple-tier tables and offer animated targets and *Ruiner*

3DO

STELLAR

Starfighter

Publisher: Studio 3DO
Developer: Krisalis

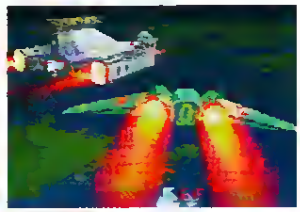
Over the last few months, Studio 3DO has released more than its fair share of good titles, with only one notable failure (*Captain Quazar*). While we'd like to report that *Starfighter* was another raging success, it has a number of strikes against it, not the least of which is that it's pushing 3DO to its extreme limits.

As a flight sim set over the landscapes of a number of alien worlds, it does have a couple of noticeable problems. One, the pace is pretty slow. Though, oddly, the frame rate is quite good, your ship and everything else on screen moves at a lethargic pace, as if they were floating through something much heavier than air. Second, the amount of draw-in is ridiculous.

On the other hand, this is a very ambitious attempt in many ways. When attacking ground targets, any weapon you choose causes an impressive amount of collateral damage, burning the ground, and creating huge craters. It's even possible to "carve" huge hills right down to sea level if you want to. The control is responsive, the missions are varied and require a lot of careful planning, since enemy installations tend to be designed as if someone were really trying to defend themselves, and with a solid couple of dozen levels and sub-missions, it lasts a while.

In spite of the pace and the draw-in, *Starfighter* is still addictive as hell. In the end, the worst thing you can say about it is that the designers' reach may have exceeded their grasp, but not by much, and if more designers pushed the envelope this way, our job would be a lot more fun.

Rating: ★★★★

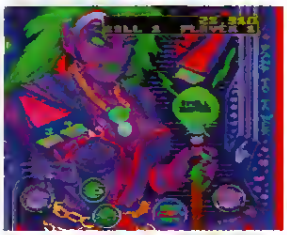


It's a testament to the joy of mass destruction and wanton landscape abuse that bad draw in and a slow game pace don't detract much from the overall *Starfighter* gaming experience

Pinball takes full advantage of these and other possibilities.

Unfortunetely, all the clever tricks can't hide the fact that the game just doesn't play that well. And without the basics right, the rest is merely superfluous.

Rating: ★★



Let's just say *Ruiner Pinball* is basically a lot of lights, bells, whistles, and (small silver)...

Virtual Boy

Panic Bomber

Publisher: Nintendo
Developer: Hudson Soft

The Virtual Boy is meant to be a 3D machine and therefore is best-suited for 3D games. *Panic Bomber* is a decent 2D game that would have worked many times better on 2D hardware.

So why are they here together? Even if you set aside the fact that *Panic Bomber* takes zero advantage of Virtual Boy's 3D abilities, the game's lack of distinguishing colors makes playing this fast-paced puzzle game a tedious process at best.

This *Tetris*-ish game has all the addictive elements of the original portable phenomenon, but spending an extended amount of time with your face stuck in the Virtual Boy is simply not an option for most folks.

Rating: ★★

Vertical Force

Publisher: Nintendo
Developer: Hudson Soft

The back of the *Vertical Force* box claims "Actual Game Play is 3D!" but the truth is far less dramatic.

The definition of 3D employed in this overhead shooter is one in which two separate planes (one foreground and one background) of gameplay co-exist within a completely confusing environment of mindless enemy ships and constant red gunfire.

If this were a regular game, then it may have been a far less troublesome ordeal, but it's not. Beyond the very unsuccessful 3D elements in *Vertical Force*, this game is totally uninspired.

Rating: ★

PC

Ecco the Dolphin

Developer: Sega
Publisher: Sega PC

Ecco the Dolphin is the only PC game to ever feature a dolphin as a main character and that novelty alone counts for a lot. No, really.

The great thing about this title is its smooth graphics and control response, even when running with Windows. These things said, the game is still little more than a conversion from the yesteryears of the 16-bit Sega Genesis. Except for a few video cut-scenes, there is little attempt to make this game look or play better for the PC. As a result, the graphics look somewhat dated. Control, while very responsive, still remains difficult, since many puzzles require the use of a shell or other object, and trying to move things using only your snout can be an exercise in futility.

For what it is, a simple arcade/action game, *Ecco* is a great change of pace from *Doom*. Helping a dolphin find its lost family can be a fun experience, even on a PC.

Rating: ★★★

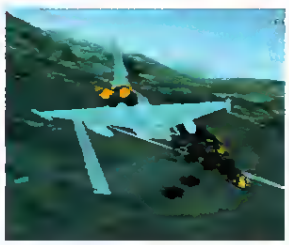
EF2000

Developer: Digital Image Design
Publisher: Ocean of America

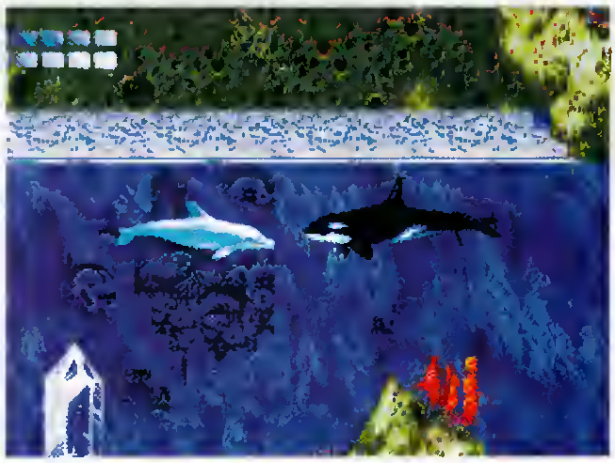
The *EF2000* fighter plane is part of the Eurofighter program, started in 1983 as a collaboration between Germany, Italy, Spain, and the UK. While the superior fighter won't be in active service until the year 2000, Digital Image Design has created a flight simulator around it that will knock your socks off.

The game has astoundingly beautiful graphics. The 4 million square kilometers of terrain are completely texture-mapped and true to their geography, meaning you can expect thick snow on the ground of Norway, and acres of marshy lowland in Finland.

The interface is so simple to use that within a few minutes you can be up and blowing MiG-29s



Flight sims regularly set new standards as new PC power is utilized. *EF2000* is no exception



Sure it's simply a port from the Genesis, but it's cute. This orca whale will give you the first clue you'll need to find your lost pod in *Ecco the Dolphin*

out of the air. Even so, there's enough realism to please even the most fanatical flight sim fan. A/I pilots, programmed with information taken from experienced combat veterans, constantly adjust to your actions, and react accordingly. Throw in the title's networking options for up to eight virtual pilots, and you've got one of the best flight sims on the market. If you're a fan of flying, pick this one up!

Rating: ★★★★

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— *Diehard*, Harrisburg, PA
ahlp@aol.com

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GTE Entertainment

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Full Tilt Pinball

Developer: Maxis
Publisher: Maxis

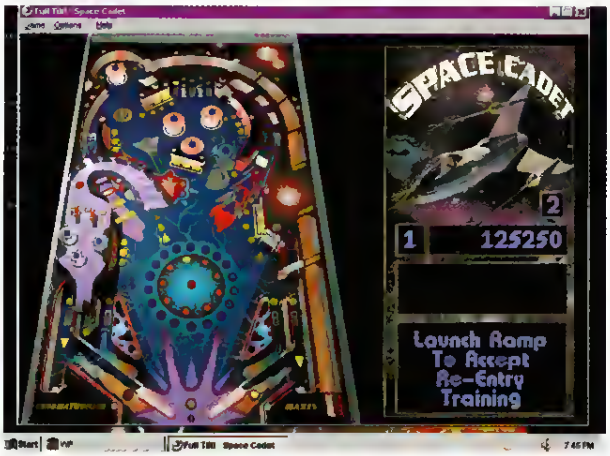
The first thing you'll notice about this game is that each table (there's three in all) seems to have been created by different teams of developers.

The Space Cadet table is by far the best, with plenty of things to do and a definite goal to achieve. The other two, however, are incredibly difficult to follow. The artwork on the Skullduggery table is cluttered to the point where you can't tell what you want to hit and what not. The same is basically true for Dragon's Keep, though to a lesser degree. Also, the physics of the ball in Space Cadet are much better than either of the others.

In conclusion, it's obvious that only one table received enough attention to make it worthwhile. If Cinematronics would have spent as much time on the other tables, this would be a fantastic game. As it is, however, it's barely adequate.

If you only want to buy one pinball sim, we suggest you check out 21st Century's offerings.

Rating: ★★



By far the best table of the three available in *Full Tilt Pinball*, Space Cadet is clear of clutter, yet full of fun targets. Shame it's not much fun to play

PC

CRITICAL ACCLAIM

Michael "Worf" Dorn and his co-star share an enlightening moment as enemy ships close in. Familiar territory, we're sure

Mission Critical

Developer: Legend Enterteinment Co.
Publisher: Legend Entertainment Co.

If Michael Dorn playing a role other than Worf from "Star Trek: The Next Generation" doesn't seem like much of a reason for you to check out this graphic adventure, you should consider the fantastic graphics and an edge-of-your-seat storyline.

The 12-minute introduction gives away nothing — only that you're on a ship called the *Lexington* which was escorting a science vessel to some unknown planet when enemy ships sprang an ambush. The entire crew had no choice but to ship out, leaving you behind to patch up the battle damaged *Lexington* and finish its mission.

Legend has done a great job blending full-motion video and gorgeous rendered backgrounds with an intriguing story, a feat that not many companies have managed to pull off. The intuitive interface is completely mouse driven, both simple to use and understand. Unfortunately, the game suffers the same curse as Sierra's *Phantasmagoria* — it looks great and plays great, but it's too easy and way too short. Most experienced gamers will probably finish this one off in a matter of days. Not a bad way to spend a weekend, but if you're short on cash, you might want to spend it on something that will give you more playing time.

Rating: ★★★★

At one point you interface with the computer to direct an attack on enemy vessels (above). Tool up well if you want to survive (right)

PC

THE EMPIRE STRIKES OUT

Rebel Assault II

Developer: LucasArts
Publisher: LucasArts

You would think that LucasArts, usually known for its quality games, would know better. Those who are unaware of the need for game publishers to turn a profit in these turbulent times will surely believe that how this one slipped by those in charge is more of a mystery than the game itself.

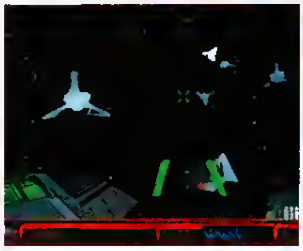
Rebel Assault II is — like the original — an FMV-based rail shooter. This means you do nothing more than try to shoot digitized objects that fly preset patterns across the screen. The video looks great and the music sounds like it was put together by John Williams himself, but it's still about as much fun as watching "90210" reruns.

So what's wrong with it? First of all, you aren't playing a game. You're watching a movie that requires you to move a stick around and press a button at certain points until you get to see more of the movie. That wouldn't be nearly as awful as it sounds if the movie wasn't so bad. The actors shouldn't be cast on an episode of "Hercules," much less star in their own game.

Even then, this game wouldn't be so bad if the plot was fresh. Sadly, it's not. It's a completely unimaginative story involving the Empire's development of a new threat to the Rebel Alliance, and an untested young man's attempt to prove his worth by thwarting Darth Vader's plans. Sound familiar?

With the sole exception of one new piece of Imperial hardware, a stealth Tie (á la *Wing Commander II*), there's nothing here you haven't seen before.

Rating: ★★



LucasArts remains one of the world's most respected developers, despite this stumble. Ultra 64's *Shadows of the Empire* should be compensation

From the creator of *Tetris* comes *Knight Moves*. While the game offers some neat new ideas, it lacks the playability that made *Tetris* such a hit

Knight Moves

Developer: Spectrum HoloByte
Publisher: Spectrum HoloByte

The newest of the Alexey Pajitnov-endorsed puzzle games, *Knight Moves* is strangely void of fun.

The object is to clear a series of levels by collecting items from the floor, then landing on certain squares marked by a crown. To reach this end, players must move their knight in correct chess fashion — two up and one over. If at any time he or she so much as touches one of the monsters patrolling the board, they're toast.

The control is easy — your knight is in constant motion, and you simply put the cursor where you want him to land next. The simplistic nature of the game is fairly self explanatory, and reminiscent of the classic *Tetris*.

However, where *Tetris* required forethought and cleverness as well as speed and luck to succeed, *Knight Moves* relies almost purely on speed and

"A new benchmark in graphics and textures...I'm very impressed."

—*Psycho*, Enid, OK
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MARCH 26TH 1996

NEXT GENERATION

Sega Saturn Special

PC

TSUNAMI

Humon forces lay waste to an orcish outpost (top). The flames engulfing buildings when they get destroyed is one of the game's greatest effects. A cut scene (right)

Title: Warcraft 2: Tides of Darkness

Developer: Blizzard Entertainment
Publisher: Blizzard Entertainment

Blizzard took every comment, complaint, and pointer gamers made about *Warcraft* and acted on them. The result of Blizzard's hard work is immediately apparent in its new *Warcraft 2: Tides of Darkness*. Graphics are better, the play control is smoother, and the network setup is easier. In short, this is the game that fans have been waiting for.

Starting six years after the humans were defeated in Azeroth (the land of *Warcraft*) the war now continues in Lordaeron across the Great Sea. The background is flushed out with biographies of important figures, histories of the different races, and enough detail about the land to make a fantasy novelist proud.

A whole new realm of strategic possibility has been opened up by the addition of several great new units and resources. There's flying units, such as the long-ranging and far-scouting Goblin Zeppelin, marine submersibles like the stealthy Gnomish Submarine, several sailing ships, and a host of original spells for mages and the new paladins.

Sporting smarter AI, you can now expect a fairly decent challenge from the computer, although it still isn't terribly aggressive. Even if you sit back and hammer some isolated units, such as an oil rig, the computer rarely responds with force unless you find its units yourself.

Ultimately, the largest part of the game's improvement lies in character control. Similar to *Command & Conquer*, you can drag a rectangle around several units to select them all at once, although the total limit of nine selected units can be a bit binding in higher levels. An Auto Command feature enables you to right click to perform an appropriate action, such as mining, attacking, or simply walking. The new system makes it easier to concentrate more on strategy rather than what key to press or button to click on.

Blizzard would be hard pressed to make this game any better. Even if you've never played the original *Warcraft*, pick this one up — it may be the best strategy game of all time.

Rating: ★★★★★

luck. Players must have supernatural accuracy to land on a certain square and snag an item before a patrolling creature comes back to do them in.

Coupled with a set of frustratingly difficult levels early on, *Knight Moves* almost seems made to disappoint puzzle gamers.

Rating: ★★

Lion

Developer: Sanctuary Woods
Publisher: Sanctuary Woods

Sanctuary Woods hit a home run with its predator simulation *Wolf*. Its next title in the series, *Lion*, continues the trend by demonstrating in a very entertaining way what life can be like for large, aggressive creatures living in today's wilds.

There are two methods to playing this game. Twenty different preset scenarios present you with certain tasks that must be completed to win. Each one is an example of a lion's everyday needs and actions necessary for survival. The other option is to choose to play a free-form simulation, and lead your lion through its entire lifetime, including mating and having cubs. When the lion you control gets to old, you take over one of its offspring, and control the life of the original feline's progeny. Kind of a "Circle of Life" deal, for those who know the film.

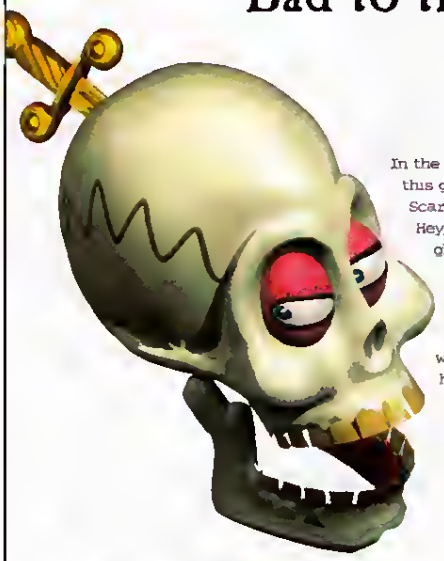
Just another day, lion around. You'll soon learn that you're not the only hungry predator around

Even though the mechanics of the game can be a little clumsy and take quite a bit of getting used to, this is a surprisingly entertaining title.

Once you master the controls, you may find yourself not only having fun but also more in tune with the difficult plight of the lion.

Rating: ★★★★

DEADHEAD:
Bad to the Bone.



In the war of the Gearheads, this guy's M.O. is dead simple: Scare the other toys silly. Hey, no problem. One glimpse of that fiendish skull, bulging, blood-shot eyes, cracked cranium and clattering jaw and what would you do - introduce him to your sister?

gearheads
a furious war of wind-up toys

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THE YEAR 2055...
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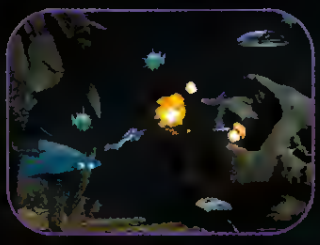
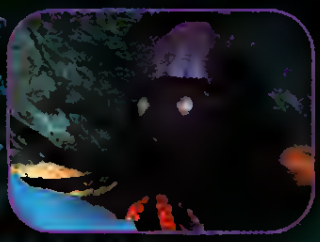
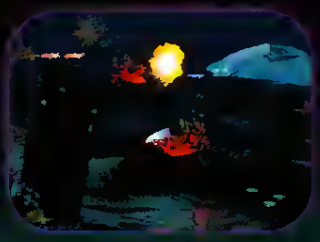
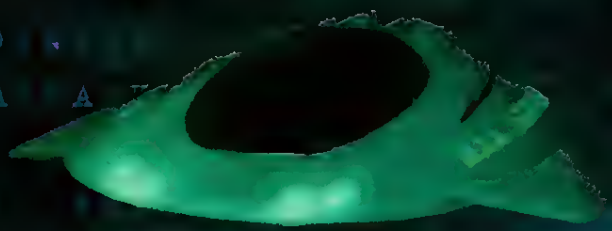
THAT MAY CHANGE
THE COURSE OF MANKIND OR
END ITS EXISTANCE

S.T.O.R.M.

"It's efforts like these that will establish a new 32 bit gaming paradigm."
-Next Generation



PlayStation
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PC

MINER HIT

The Dig

Developer: LucasArts
Publisher: LucasArts

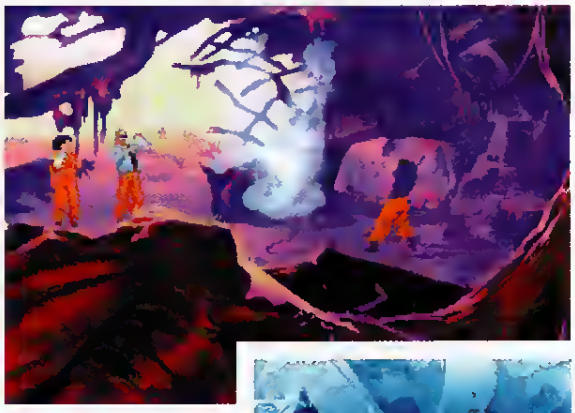
LucasArts has always been praised for its graphic adventures. *From Indiana Jones and the Fate of Atlantis* to *Day of the Tentacle*, it's always tried to make its games a pleasure to play while breaking new ground in the areas of graphics and player control. Although it's not perfect, *The Dig* is yet another solid graphic adventure with some great attributes.

The story is a Steven Spielberg original that starts with a group of astronauts sent to divert an asteroid from a collision with Earth. Shortly after landing, they find themselves transported to an alien world. Your goal is to discover the reason they were brought to the planet, who brought them here, and what they must do to get home.

Puzzles tend to be more frustrating than in some of LucasArts' previous titles. For example, some doors require a combination to open them, but your clues are so confusingly drawn that you still need to try several variations.

However, even though the puzzles can make the game a trifle frustrating, the interface is a dream. A right click gives you full access to your inventory, while a left click will perform a variety of actions. LucasArts has finally perfected its point-and-click system to where it becomes second nature while you play. *The Dig* may not be the best graphic adventure ever, but it's definitely worth a look.

Rating: ★★★★



Early in your explorations of the planet, you'll run into this strange apparition (above). As Commander Boston Low delves deeper into the recesses of the alien world, his surroundings get more and more bizarre (right)

SU-27 Flanker

Developer: Flying Legends
Publisher: Strategic Simulations, Inc.

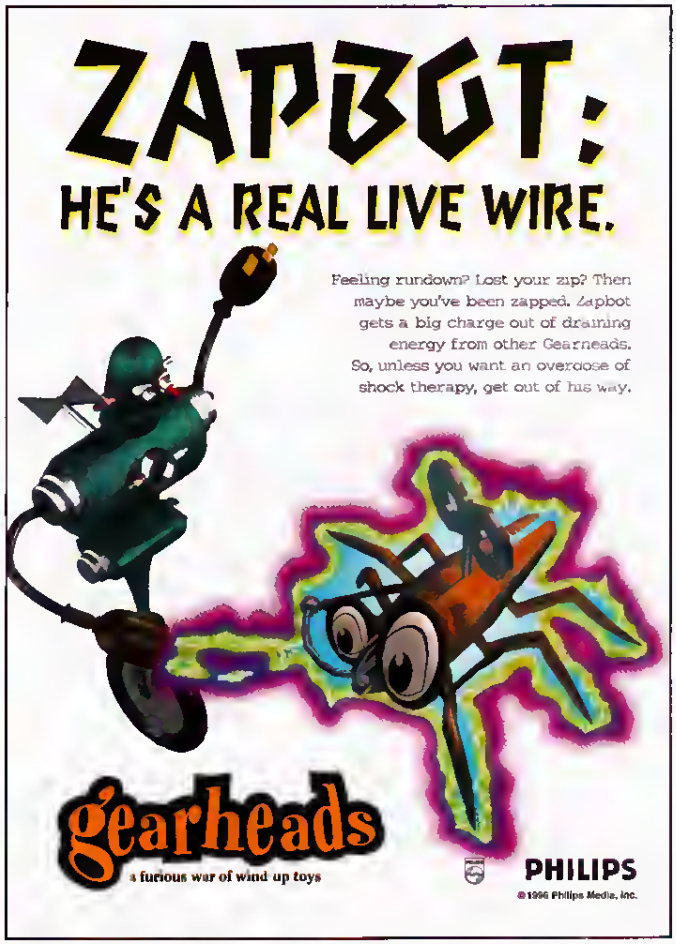
There is no doubt that *SU-27 Flanker* is one of the most realistic and detailed flight simulators out there. The Russian fighter plane, designed in the 1970s as an answer to the American F-15 Eagle, is so well modeled in this flight sim that you can do anything the actual jet can do, including tail slides and dynamic braking maneuvers.

It's so realistic, in fact, that unless you're a real flight sim fanatic, you'll be completely lost after two minutes.

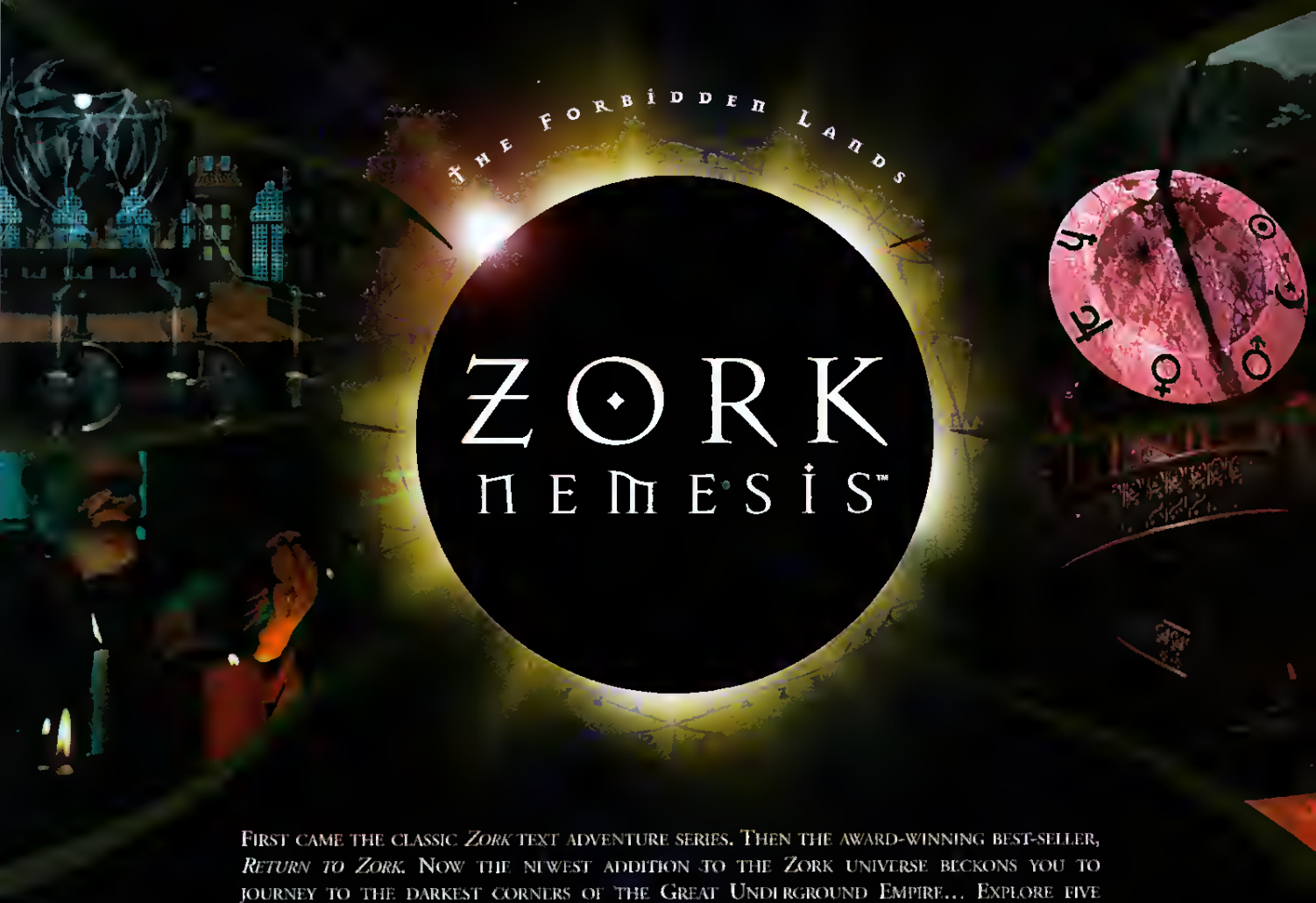
When you first load up the game, there's no introduction, or any sort of lead-in to help you get your bearings. You're simply presented with a screen full of filenames. Even though the product runs under Windows 95 (they're now working on a DOS version), there aren't any long filenames, making it incredibly difficult to figure out which file to choose. If you select a file randomly, you stand a fair chance of selecting one of the General Missions. "General" meaning that you are the ranking officer of the forces, and you have to configure the mission before you can fly it.

The learning curve to this game will daunt any but the most persistent pilot. On the positive side though, There's no digitized voices or full-motion video to deal with, just pure flying. Down to the notations in the cockpit which are

***SU-27 Flanker* may daunt even the most dedicated gamer with its realism**



ZORK PLACED MILLIONS UNDER ITS SPELL...
THE SPELL IS YET TO BE BROKEN.



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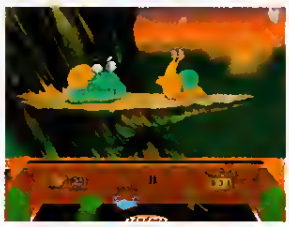
in Russian (the manual comes with an introduction to the Russian alphabet — like that's going to help), the game is designed for realism over ease of use. In the end, the game is unsurpassed when it comes to modeling the SU-27.

If you're an intense flight sim fan, you might want to check this out. Otherwise, give this one a wide berth.
Rating: ★★

Torin's Passage
Developer: Sierra On-Line
Publisher: Sierra On-Line
Al Lowe has tried his hand at something other than the naughty *Leisure Suit Larry* series and surprisingly enough he's not only crafted an entertaining family-oriented adventure, but one full of depth and character.

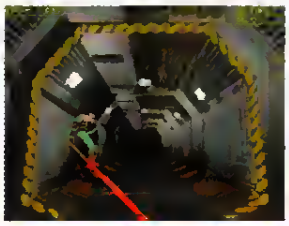
The story is right out of a child's fairy tale. Torin's parents are mysteriously kidnapped, and he has to find them by traveling through different layers of his world (it's built like a jawbreaker with many different layers inside of each other).

Graphics are superb — hand-painted backgrounds complimenting Disney-esque animated characters. The humor, while certainly not Lowe's usual *Leisure Suit Larry*-style, is genuinely entertaining, if a bit silly in parts. The only real hang up is that the puzzles themselves are a bit difficult. If a family plays together (which is what game was designed for), a child might feel a bit excluded if mom or dad has to do all the puzzle solving for the adventure to continue. For the single adventurer though, this one is definitely a winner.
Rating: ★★★★



Torin's Passage* is full of interesting creatures, all from the creator of *Leisure Suit Larry

Wetlands
Developer: New World Computing, Inc.
Publisher: New World Computing, Inc.
Wetlands is yet another rail shooter, with nothing to do but watch the scenery go by and hit targets when they appear on the screen. This time, you play a bounty hunter searching for an escaped convict on the planet of



Rail shooters aren't NEXT Generation's cup of tea, but at least *Wetlands* is inventive

Waterworld, which — as you may have guessed — is a vast ocean.

There's only a few things that sets this rail shooter apart from the hordes available, one of which is the graphics. First, the traditional cel animation does a great job of modeling true human movement. And when a character stumbles or falls, it looks exactly like it would in real life.

Unlike *Rebel Assault II*, *Wetland*'s plot is truly inventive. Although it's not award-winning stuff, there are a few loops thrown in that might catch you unaware. Finally, a couple of nice humorous touches were thrown in (like elevators that play Musak at to add to the game's overall atmosphere). If you're a big fan of rail shooters, this is a good one, but if you're a big fan of gaming, keep shopping.
Rating: ★★

Williams Arcade Classics
Publisher: Williams
Developer: Digital Eclipse
Riding high on the wave of retrogames is *Arcade Classic* from Williams. Digital Eclipse has developed an emulator for the Motorola 6502 processor — the brain behind some of the most impressive arcade games of the early 80s, enabling you to play arcade-perfect copies of *Defender*, *Joust*, *Robotron*, *Defender 2* (aka *Stargate*), *Sinistar*, and *Bubbles* on your PC.

Although there are shareware versions of most of these games around, many of the best features of the games were unintentional bugs, all of which are faithfully recreated. The book keeping modes and difficulty settings of the games are fully adjustable, enabling you to play "virtual arcade operator."

The package also comes with a multimedia presentation that features in-depth histories of the games and QuickTime interviews with their creators. It really is a chance to own the arcade games that made this industry what it is today. If you're into the retro trip, you can't do better than this disc.
Rating: ★★★★

Macintosh

Curse Of Dragor
Publisher: Domark
Developer: Domark
The PC industry used to be full of simple first-person RPGs that enabled characters to take a few simple skills, develop a character around them, and to explore a simple dungeon floorplan. *Curse of Dragor* from Domark is one of these simple adventures, bringing a simple and ultimately two-dimensional play experience to Macintosh owners.

Gameplay basically consists of wandering around a maze picking up items, fighting evil creatures, and trying to find the clues that will lead you to the end game sequence. Up against today's more sophisticated RPGs, this just isn't going to be enough to excite most players. The minimalistic approach to skills and character design ensures that RPG fans aren't going to be too excited, while the step-by-step statistical nature of combat will leave action fans bored as well.

Once you're past the game itself (unfortunately, we mean it) *Curse* is an impressive product. Graphics, sound, and control are all excellent, and the game has enough twists and turns to keep a player who does like the basic nature of the product playing for hours. In the end, while it's by no means a bad game, *Curse of Dragor* is a holdover from a genre that has run out of steam.
Rating: ★★

Shockwave Assault
Publisher: Electronic Arts
Developer: Electronic Arts
Like the 3DO version before it, *Shockwave Assault* for the Mac is basically a graphically intensive shoot-'em-up in a 3D world. Players watch a little video footage detailing their mission, step behind the controls of a ground fighter, and then weave through a dangerous outdoor course trying to destroy everything that moves. Sound like fun?

It is... for a while.

Although *Shockwave Assault*'s many missions take players everywhere from Peru to

rating super nes genesis

Egypt trying to defeat the alien menace, there's just not enough variation in actual gameplay to keep the title fresh and interesting after about an hour. The three levels of difficulty control can add a little challenge to veteran players, but the basic elements of gameplay never change. Fly, shoot, destroy, move on...

Shockwave Assault is the perfect title for those who don't mind brainless action patterns over and over. It's a perfect game for those days when you want to lose a couple of hours and have nothing to show for it.

But if you're looking for innovation, or play changes that are anything more than merely superficial, you'll want to find your weekend fun somewhere else.

Rating: ★★★

Warcraft

Publisher: Davidson
Developer: Blizzard

Finally a Mac conversion of one of the most entertaining PC strategy games of all time. Blizzard's *Warcraft* is fantastic realtime tactical adventure in the style of *Command & Conquer* and *Dune II*.

Players start with a Town Hall (an edifice capable of producing basic workers) and a few peons with which to try building enough soldiers and new structures (such as farms, barracks, and lumbermills) to meet the changing requirements of each level.

A choice is offered between Orcs or Humans, each with their own special soldier, structure, and voice options.

Amazingly easy to pick up and play, *Warcraft* still manages to offer enough challenge to keep gaming veterans happy for hour after hour. Completed by sharp graphics, and good voice acting, the only thing holding this game back at all is its somewhat limited play options, a flaw that is corrected in the sequel.

The perfect game for any Mac strategy enthusiast.

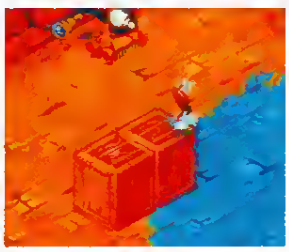
Rating: ★★★★

Genesis

Spot Goes To Hollywood

Publisher: Acclaim/Virgin
Developer: Eurocom

Talk about marketing, a circle on a soda can now is starring in his second videogame. And despite the ridiculous idea, *Spot Goes To Hollywood* really isn't all that bad. The game is played from a 3/4



Spot's a great looking Genesis game, but there just isn't enough good action to go around

perspective (traditionally a difficult point of view from which to control an action game) but this time by using a diagonally oriented control method, Eurocom has managed to make it work.

Graphics are nice for the humble Genesis, but in a final analysis, the game offers only enough excitement to be considered average.

Rating: ★★

Cutthroat Island

Publisher: Acclaim
Developer: Software Creations

Cutthroat Island doesn't suffer from any one blatant shortcoming,

Instead of punching and kicking, like in *Final Fight*, you slash and kick. End result, no difference

instead it suffers from a lack of anything that sets it apart from an action game three years ago. There's the *Final Fight* gameplay, the 8-bit NES quality graphics, and finally the obligatory mine-cart level that all together make *Cutthroat Island* one of the more generic titles available.

If there was a formula for making poor action games (and we're starting to believe that there is), *Cutthroat Island* would be the template.

Rating: ★

SORRY!

No new games were made available for review this month on the following systems

- 32X
- CD-i
- Sega CD
- Neo-Geo
- Arcade

Super NES

DON'T WALK THIS WAY

Revolution X

Publisher: Acclaim
Developer: Rage

While it's true that the arcade version of *Revolution X*, a redundantly repetitive shooter featuring Aerosmith, has done reasonably well, it is questionable as to whether this game will please anyone as a home game.

Moving a cursor around the screen to plow-down what seems like endless supplies of totally generic and mindless targets is about as challenging as getting your shoes on the right feet and not quite as much fun.

This game is for the most die-hard of Aerosmith fans and shooter fanatics only — and in case you're wondering, no the girl that's always in Aerosmith's videos is not in the game.

Rating: ★

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rating

32-bit gamer's guide

Your quintessential next generation gaming guide

In finals roundup, **NEXT Generation** provides you with a comprehensive list of all the significant next generation games released so far. Please note that some of the games reviewed here have been superceded by sequels. In this case be sure to check out the newest game first.

Also, a simple rating out of five stars does not give enough information to judge a game. If you require further information, back issues of **NEXT Generation** can be ordered on page 32, or you can consult *NG OnLine* at http://www.next-generation.com/ng/.

Where a game name is accompanied by the suffix (Japan), it means the game (at press time) is only available as an import from Japan, and will not work on standard US machines.

Title	Publisher	NG Rating
PlayStation		
Agile Warrior	Virgin	★★
A-Train	SCE	★★★
Aquanaut's Holiday (Japan)	ArtDink	★★★★
Arc The Lad (Japan)	SCE	★★★★
Battle Arena Toshinden	SCE	★★★★
Boxer's Road (Japan)	New Corp	★★★
Cosmic Race (Japan)	Neorex	★
Crime Crackers (Japan)	Sony Entertainment	★★
Criticom	Vic Tokai	★★
Cyberspeed	Mindscape	★★★
Cyber Sled	Namco	★★
Cyber War (Japan)	Coco Nuts	★★
Defcom 5	Data East	★★★★
Destruction Derby	Psygnosis	★★★★
Doom	Williams	★★★★
Dragon Ball Z (Japan)	Bandai	★★
Gex	Crystal Dynamics	★★★
Goal Storm	Konami	★★★★
Gunner's Heaven (Japan)	Media Vision	★★★★
In the Hunt	Xing	★
In the Zone	Konami	★★★
Jumping Flash!	SCE	★★★★★
Jupiter Strike	Acclaim	★★★★
Kileak The DNA Imperative	SME	★★★
King's Field	From Software Inc	★★
Loaded	Interplay	★★★★
Metal Jacket (Japan)	Solan	★
Mobile Suit Gundam (Japan)	Bandai	★★
Mortal Kombat 3	Publisher	★★★
Motor Toon GP (Japan)	SCE	★★
NBA Jam Tournament Edition	Acclaim	★★★★
NFL Gameday	Sony Interactive	★★★★★
NHL Face Off	Sony Interactive	★★★★★
PGA Tour Invitational '96	Electronic Arts	★★★
Philosoma	SCE	★★
Power Serve 3-D Tennis	Ocean	★★★
Power Baseball (Japan)	Konami	★
Raiden	Seibu	★★
Rayman	UbiSoft	★★★★
Ridge Racer	Namco	★★★★
Ridge Racer Revolution (Japan)	Namco	★★
Shockwave Assault	Electronic Arts	★★
Space Griffon	Atlus	★★
Tekken	Namco	★★★★
Total Eclipse Turbo	Crystal Dynamics	★★
Toukon Retsuden (Japan)	Tomy	★★★★
Twisted Metal	SIE	★★★★
Viewpoint	Electronic Arts	★
Warhawk	Sony Interactive	★★★★
Wipeout	Psygnosis	★★★★★
WWF Wrestlemania	Acclaim	★★★★
X-Com: UFO Defense	Microprose	★★★★★
Zero Divide	Zoom	★★★
Saturn		
Astal	Sega	★★★
Battle Arena Toshinden (Japan)	Sega of Japan	★★★
Battle Manster (Japan)	Naxat Soft	★★
Blackfire	Sega	★★★
Bug!	Sega	★★★
Clockwork Knight	Sega	★★★
Clockwork Knight 2 (Japan)	Sega	★★★
Cyberspeed	Mindscape	★★★
Dark Legends (Japan)	Data East	★★
Daytona USA	Sega	★★★★
Deadalus (Japan)	Sega	★★★
Double Switch	Digital Pictures	★★
F-1 Live Information	Sega	★★★★
Galactic Attack	Acclaim	★★★
Gotha (Japan)	Sega	★★★
Hang-On GP '95	Sega	★★★
High Velocity	Atlus	★★★
Johnny Bazookatone	US Gold	★★★
Last Gladiators (Japan)	Kaze Co	★★★★
Mansion of Hidden Souls	Sega	★★★
Myst	SunSoft	★★★
NHL All-Star Hockey '96	Sega	★★
Off-World Interceptor	Crystal Dynamics	★★★
Panzer Dragoon	Sega	★★★★
Pebble Beach Golf Links	Sega	★★★
Riglord Saga (Japan)	Sega	★★★
Quarterback Attack	Digital Pictures	★★★
Sega Rally Championship	Sega	★★★★★
Shinobi Legions	Sega	★★★
SimCity	Maxis	★★★
SteamGear Mash	Takara (Japan)	★★
Street Fighter The Movie	Acclaim	★★★
Toma (Japan)	Tengen	★★
Theme Park	Electronic Arts	★★★
ThunderStrike 2	US Gold	★★★★
Virtua Cop	Sega	★★★★
Virtua Fighter	Sega	★★★★
Virtua Fighter Remix	Sega	★★★★★
Virtua Fighter 2	Sega	★★★★★
Virtua Racing	Time Warner	★★★
Virtual Hydlide	Atlus	★★
Virtual Volleyball (Japan)	Imagineer	★
Wicked 18	Vic Tokai	★★★
Wing Arms	Sega	★★★
World Series Baseball	Sega	★★★★
Worldwide Soccer	Sega	★★★
X-Men: Children of the Atom	Capcom	★★★
3DO		
Alone In The Dark 2	Interplay	★★★★
Battlesport	Studio 3DO	★★★★★
Bladeforce	Studio 3DO	★★★★★
Burning Soldier	Panasonic	★★
Bust a Move	Panasonic	★★★★
Cannon Fodder	Virgin	★★★★
Captain Quazar	Studio 3DO	★★
Crime Patrol	American Laser Games	★★
D	Panasonic	★★
Deathkeep	SSI	★★★
Demolition Man	Virgin	★★
Drug Wars	American Laser Games	★★
Family Feud	GameTek	★★★
Flying Nightmares	Domark	★★★
FIFA International Soccer	EA	★★★★★
Flashback	US Gold	★★★
Gex	Crystal Dynamics	★★★★
Ghost Hunter	Matsushita	★★★
Guardian War	Panasonic	★★★
Hell a Cyberpunk Thriller	GameTek	★★
Icebreaker	Magnet Interactive	★★★
Immercenary	EA	★★★
Iron Angel of the Apocalypse	Panasonic	★★★
Iron Angel' The Return	Panasonic	★★★
Jammit	Street Sports	★★
John Madden Football	EA	★★★★
Killing Time	Studio 3DO	★★★★
Kingdom The Far Reaches	Interplay	★★
Lemmings	Psygnosis	★★★★
Lost Eden	Virgin Interactive	★★★★
Mazer	American Laser Games	★
Mega Race	Mindscape	★★
Microcosm	T&E Soft	★★

Title	Publisher	NG Rating
Myst	Panasonic	★★
PO'ed	Any Channel	★★★★
Off-World Interceptor	Crystal Dynamics	★★★
Panzer General	SSI	★★★★
PGA Taur Golf '96	EA Sports	★★★
Quarantine	GameTek	★★★
Rebel Assault	Lucas Arts	★★
Need for Speed	EA	★★
Raad Rash	EA	★★★★
Samurai Shadown	Crystal Dynamics	★★★
Seal of the Pharaah	Panasonic	★★
Scramble Cobra	Panasonic	★★
Shanghai The Great Wall	Activision	★★★
Shock Wave	EA	★★
Star Fighter	Studio 3DO	★★★★
Operation Jump Gate	EA	★★★
Slam 'N' Jam '95	Crystal Dynamics	★★★★
Soccer Kid	3DO	★★
Space Hulk	EA	★★★★
Space Pirates	American Laser Games	★★★
Star Control II	Crystal Dynamics	★★★
Starblade	Panasonic	★★
Station Invasion	Club 3DO	★★★
Super Street Fighter II Turbo	Panasonic	★★★★
Super Wing Commander	Origin	★★★★
Supreme Warrior	Digital Pictures	★★
Syndicate	EA	★★★★
The Daedalus Encounter	Panasonic	★★★
The Last Bounty Hunter	American Laser Games	★★
Theme Park	EA	★★
Trip'D	Wrap	★★★
VR Stalker	American Laser Games	★★★
Way of the Warrior	Universal Interactive	★★
Wing Commander III	EA	★★★★★
Wolfenstein 3-D	Id/Logicware	★★
World Cup Golf	US Gold	★★
Zhadnost:The People's Party	Studio 3DO	★★★

Jaguar

Aircar	Midnite	★★★
Alien vs Predator	Atari	★★★★
Baldies CD	Atari	★★★
Battlemorph	CD	★★★★
Blue Lightning CD	Atari	★★★
Bubsy Fractured Furry Tales	Atari	★★
Burn Out	Atari	★★★
Connan Fadder	Virgin Interactive	★★★★
Checkered Flag	Atari	★★
Club Drive	Atari	★
Doom	Atari	★★★
Double Dragon V	Tradewest	★★
Dragon	Atari	★★★

Title	Publisher	NG Rating
FlipOut!	Atari	★★★
Highlander	Atari	★★★
Hover Strike	Atari	★★
Iron Soldier	Atari	★★★
I-War	Atari	★★
Pitfall:The Mayan Adventures	Atari	★★★★
Power Drive Rally	Time Warner	★★★
Rayman	Atari	★★★★
Runner Pinball	Atari	★★★
Syndicate	Ocean	★★★★
Tempest 2000	Atari	★★★★
Theme Park	Ocean	★★
Troy Aikman Football	Williams	★★
Val d'Isere Skiing	Atari	★★
White Men Can't Jump	Trimark	★★★
Wolfenstein 3-D	Atari	★★
Zool 2	Atari	★★★

32X

Brutal	Gametek	★★★
Cosmic Comage	Sega	★
Fahrenheit	Sega	★★
Knuckles Chaotix	Sega	★★
Metal Head	Sega	★★
Mortal Kombat II	Acclaim	★★★
Motocross Championship	Sega	★★★
NBA Jam Tournament Edition	Acclaim	★★★
Night Trap	Digital Pictures	★
Pitfall The Mayan Adventures	Activision	★★★
Quarterback Club	Acclaim	★★★
RBI '95	Time Warner	★★
Shadow Squadron	Sega	★★★
Slam City with Scottie Pippen	Digital Pictures	★★
Star Wars Arcade	Sega	★★★
Super Afterburner	Sega	★★★
Super Space Harrier	Sega	★★★
Tempo	Sega	★★
Virtua Fighter	Sega	★★★★
Virtua Racing Deluxe	Sega	★★★
World Series Baseball	Sega	★★★★★
WWF Raw	Acclaim	★★
Zaxxon's Motherbase 2000	Sega	★
36 Great Holes	Sega	★★★

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Here's what the ratings signify:

★★★★★ Revolutionary
★★★★ Excellent
★★★ Good
★★ Average
★ Bad

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Skeleton Warriors [illegible] Entertainment Group

corresponding

Communicate. Everyone's doing it these days. So why don't you? Write to **NEXT Generation** letters, 1350 Old Bayshore Highway, Suite 210, Burlingame, CA 94010. Or fax us at (415) 696-1678. Or e-mail us at ngonline@imagine-inc.com. We cannot reply personally to all correspondence, but everything is read.

Just the fax, ma'am. Just the fax.

Is **M2** going to be a system, or is it going to be an adapter for the 3DO system, or both?

Renato D Maduro
GeneratCUDZ56A@prodigy.com

Right now the system is scheduled to be released as both a standalone unit and as an upgrade for the existing 3DO machines. Plans are also still in the works for an expansion card that will enable PC owners to add M2 capability to their home machines as well.

What does it take for a game system to **go out of business**, or in simpler terms to get pulled off the shelves? I own a Jaguar and wonder how long these guys are going to keep it up.

Now that I own a PlayStation and a Saturn, and although I do love my Jag, I don't see how somebody would want to buy a Jag when looking at the new 32-bit system games.

Sergio Martin
umbles@mcl.ucsb.edu

Obviously, there's no set answer for what happens to make a system fade away, and it's usually not an overnight occurrence. Systems like the NES and Sega Master System are still in use in many homes, and while cartridges are harder to find than they used to be, they are still floating around.

These systems were replaced by the companies which created them. Companies whose systems leave the market due to poor sales performance, like the original TurboGrafx-16 here in the US, usually find that to lower prices any further will cause them to quickly lose a large chunk of money, forcing them to throw in the towel before more financial damage is done.

Concerning the two systems you named in your letter, if they are phased out, first you will see a major marketing push aimed at selling through their existing stock as quickly as possible. After this phase, you may see a few more games released that were still in development at the time the company decided to drop the system. Eventually both the system and the games will become more and more difficult to find on the shelves, and eventually they'll become novelties seen mostly in "What ever happened to?" articles. Still, there's no telling what the future will bring..

Dirty, smelly memory cards? No problem — just stick 'em in the laundry with your clothes

I was wondering, is the Jaguar really 64 bits without **Jaguar CD**?

Farley11@aol.com

If you're measuring the bits of a system by its data path (something only Atari does), then the Jaguar is indeed a 64-bit machine, with or without the CD-ROM drive.

Where is your **web page**? Could you please list the address again so that I can take a look? Thanks.

David Crawford
David_O._Crawford@NLTL.Columbia.edu

Lots of you have been writing in with compliments and suggestions for our new web page, *NEXT Generation OnLine*. For those of you who are still having trouble finding it though, take a look at http://www.next-generation.com/ng/.

What is the significance of the knob near the plug of the Sony controller, which the third-party controllers don't seem to have? Is that related to the fact that third-party controllers are rumored to work poorly with the Sony Memory Cards? If this is the case, doesn't it raise ethical questions about truth in advertising to the consumer and fair business practices for the companies that make the third party controllers?

Also, is there any validity to the claims that the **pack-in Sony controllers** are of lesser quality than the extra ones you can buy separately from Sony?

Mitch Jones
Placaville, CA

The knob you refer to is an RF shield that includes a piece of iron used to keep radio frequencies emitted by the controller down so that the unit meets FCC standards. While you could make an argument that poor shielding on third party controllers may interfere with the memory card's performance, it would not be due to any sort of subterfuge on Sony's part.

Every manufacturer of control pads should have some sort of shielding unit on their pads to keep down emissions (keep in mind it may not look the same as Sony's).

And in response to the second question, nope. According to Sony's vice president of operations, "they squirt out of the same machine." The units are produced by the same equipment in the same location, and each one is exactly like all of the others...

I love to do throws in *Tekken*. Car wars in *Twisted Metal* rule. Flying *Warhawk* is a blast. However, a brand new PlayStation and 11 games later, I'm wondering, **where are the RPGs?** I support Sony big time; so when is it going to support my favorite videogame genre?

Sony says it wants to capture the mature gamer. I hope it doesn't think this is done solely with sports titles. I'm 26 and have been playing videogames since *Pong*. People in my age group tend to play all types of videogames because we grew up on them. Someone should realize that this age group needs RPGs. This is a very mentally stimulating type of game that provides more than just a break from the latest fighter, shooter, or new 3D wonder.

It is also very satisfying to plunk down $60 on new game knowing you'll be playing it for the next several months. Unlike

other videogame genres that you sometimes finish in a week. Graphics are not everything.

DwayneV@aol.com

Cheer up, there's already a few RPGs due out for PlayStation, and the tendency toward re-release of PC game titles almost guarantees that some of the more successful RPGs from past years will see new light on the console systems. In the meantime, we recommend that you give those sports games another try. Some of them are well worth the effort.

I have never written to a game magazine before, although I have wanted to on many occasions. It took your December (**NG 12**) issue to break the ice for me. I felt compelled to write in about the feature **"Which game system is the best?"** The day this issue came out it caused a bit of debate. Everyone had a comment about it, some very good, some very bad.

I personally agreed with your system ratings, but that's besides the point. I just wanted to commend you for being the first magazine I've ever read that's courageous enough to rate the next-generation systems. You obviously aren't worried about support from the mega corporations that tend to sway the decisions of other magazines.

I hope you continue to be unbiased in your coverage of this multibillion dollar industry. Please continue to keep in mind that this industry revolves around the consumer, not Nintendo, Sega, or Sony. We decide who comes and goes. Following this simple guideline will assure you continued success and most of all, respect.

Jason Wisdom
wiseone@ix.netcom.com

Thanks for having the guts to finally rate systems instead of just games! I have been an avid reader of your magazine since issue 7, and I admit you've shown guts before with your extremely close scrutiny of Saturn in issue 8 and the **weird letters you sometimes publish**, but this is unprecedented. While most magazines are content to sometimes have a "top 10 reasons the [insert system name here] is so cool," you went out there and gave an honest, well-researched, and fair review of each and every system.

Keep up the good work!

SamSikola@aol.com

We continue to receive letters on our recent system wars article (other less favorable opinions were printed in our last issue, **NG 14**), and we're happy that so many of you took the time to write in and tell us that you liked it.

Could somebody please tell me why not one of the 32-bit (or 64-bit) game consoles was made with a modem for multiplayer games?

It boggles my mind that Sony, the company that has thought of almost everything before making its first foray into the videogame console market, decided to limit PlayStation to a link-up cable instead of a modem. It's hardly convenient to pack up PlayStation and the television (assuming it's portable), and take it to my friend's home (assuming my friend didn't buy a Saturn, Ultra 64, or M2). **A modem would be much easier to use** for playing a game with your pal across town.

Allen Townsend
alleng@ra.isisnet.com

Although no one's ready to give out details quite yet, it seems a certainty that with the current explosion of PC online gaming, every console manufacturer has plans for some sort of modem device. The reason that modems weren't included in the base systems is surely just a matter of pricing — but you can bet that doors have been left open to facilitate the addition of a modem at a later date.

Keep in mind that right now both Sega and Sony are devoted to selling the machines themselves with a view to seizing market share and establishing a large installed base. A major effort to sell new peripherals (possibly including a modem add-on) can be expected later in 1996. It's also expected that Nintendo will introduce Ultra 64 with plans for some form of gaming network.

Of all the interviews you had with game designers and producers since your first issue, the best one, I think, was the one with Yu Suzuki in **NG 11**. I really look up to both Yu Suzuki and Shigeru Miyamoto for the games they have created.

But there is someone else who I greatly admire, and his name is Masaya Nakamura, **the creator of *Pac-Man***, and head of Namco. Can you please give me a brief history on the games that he had created? Thank you.

Trevor Cuthbertson
tcuthber@cycor.ca

NG 12's "Which game system is the best?" feature earned us extreme criticism and respect

Masaya Nakamura did not create these games himself. As head of Namco, however, he is ulomately responsible for the influence these games have had on the developing game industry.

Testament to PlayStation: One morning, to my dismay, I found out that I had washed and **dried my PlayStation memory card with my work clothes**. We're talking heavy-duty cycle with lots of detergent, and then a very long, high-heat drying.

Of course, the card was chock full of 15 blocks of my most important saves and game data. I took out the two screws, wedged it open to air out, and hoped for the best. Three hours later, I tried it out and it was fine; no data lost at all. All that happened is I have a much whiter card! The Sony PlayStation never ceases to amaze.

Mike Horner
MyCorner7@aol.com

Well, you've just discovered something new about solid-state electronics. As long as there's no current present to short across the water, you can soak components for as long as you want. In fact, an editor at **NEXT Generation** once took a garden hose to an arcade board to clean it. Just make sure everything is dry before you give it any juice, and oh yeah, remember, if this doesn't work, you read about it in *EGM*.

I'm glad to see that you are covering **XBand** but I've noticed that you are only covering the good points and not the bad ones. I used to have an XBand but I had to give it away because I got a $200 bill.

XBand charges you for everything that you do to your account, they also charge you for long distance play and chat time.

I still think that XBand is a good idea (I'm now running a club on XBand from the Internet), I just think that people should be warned.

Jake Lebow
lebow@infi.net

Obviously, it's up to all players to make sure that they understand how any online service charges for its services. But it is worth printing this letter as a reminder.

In **NG 10**, you ran a letter that I wrote complaining about NG's **"borders and format."** I suggested that maybe you could pick up some tips from *EGM*.

Well, I have to say, from the time that I wrote that letter, until now, I have never seen such an improvement! *EGM* went way down in terms of picture quality as anyone can see, and it seems like your mag has gone way up!

Bradley Y. Olson
BYOlson@cris.com

Our art department has been waiting for this day, Bradley. Now they can sleep at night. We thank you.

Their site.

Our site.

http://www.gameplayers.com

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Next Month

Hopeful parents

How to get a job in the game industry

Next month, **NEXT Generation** explains how to turn a hobby into a profession. We explain what jobs are available, what qualifications you'll need, who to apply to, and yes — we'll even tell you how much you'll earn.

NEXT Generation #16
on sale March 12, 1996.

Of course, the smart way to get NEXT Generation is to subscribe and have it delivered to your door each month. Subscribing also saves you money. To find out how, turn to the insert between pages 48 and 49.

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The way games ought to be...

Hi-octane game theory by **Chris Crawford**

So what is Chris Crawford's problem with graphics? How can great visuals actually make a game *worse*? Gaming's most controversial columnist explains all...

Since the beginning of time, I have had a reputation for an anti-graphics philosophy. Ask anybody in the industry — they'll tell you. "Old Man Crawford hates graphics," they'll say. "He rudely calls it 'eye candy' and expects his audience to make sense out of screenfuls of numbers. He's completely out of touch with market reality, that crazy old fool."

In this article, I will explain what I really believe. My comments apply not just to graphics, but to all cosmetic factors in entertainment software: graphics, animation, sound, and music.

I'm not extremist, everybody else is!

My first observation is that the design community has always been ga-ga over graphics. The genesis of this attitude is not hard to understand. In the early days, when we were screwing around with Apple IIs and Ataris, the graphics available on computers were execrable. The best you could get was a 320h x 192v x 2-color display. Even that display taxed the resources of the 8-bit machines to the limit. Each such display ate up one-eighth of the RAM in the machine, and it took several seconds to redraw such a screen, so that animation was an impossibility. Moreover, the floppy disks of the time only held about 100 K of data, so a dozen such images would fill a floppy disk.

The IBM-PCs didn't start to get adequate graphics until the advent of the VGA boards just a couple of years ago. Their sound capabilities were limited to silly squeaks and mechanical tones until SoundBlaster boards and their equivalent became widespread. Thus, for most of our history, we've been fighting the cosmetic limitations of our machines. And this battle has warped our thinking.

Entertainment designers have been warped by "cosmetics deprivation." They've fought the problem for so long that it has become the only problem that matters, the one overriding issues that determines everything. This generation of designers has no sense of balance.

The fundamental point on which I insist is that the use of cosmetics is a means to an end, not an end in itself. I maintain that graphics, sound, and animation serve to communicate situation, emotion, context changes, and other aspects of the overall game experience, but that cosmetic factors are not in themselves the goal of the experience. The essence of the interactive experience lies not in what you see and hear — it lies in what you do.

Interactivity is composed of three fundamental steps: listening, thinking, and speaking. Cosmetic factors contribute to the success of the third step, speaking. That's all.

Perception is certainly the essence of the expository media. What you see and hear is unquestionably the essence of a movie. The fundamental difference between exposition and interactivity is that the interactive audience is active. Supporting and enhancing that active role for the audience is the prime objective of all interactive entertainment. Thus, perceptual factors, while playing the central role in expository entertainments, are reduced to a supporting role in interactive entertainments. They are a means to an end, not the end itself.

And what is the end? It is interactivity. Does anybody out there remember interactivity? It's what this whole revolution is supposed to be about. You don't see magazine covers touting "Graphics Entertainment." And what is the relationship between cosmetic factors and interactivity? I once wrote an article in which I explained that interactivity is composed of three fundamental steps: listening, thinking, and speaking. Cosmetic factors contribute to the success of the third step, speaking. That's all. They are necessary — but they are not central.

The mainstream game industry rejects this notion. The conventional wisdom is that graphics, sound, and animation are the defining characteristics of good product. Occasionally you'll hear lip service paid to other factors, normally in the inarticulate comment that "a game needs good gameplay, too." Even then, the notion is merely an addendum to the prime directive of cosmetics. Industry wisdom holds that graphics are an end, not the means.

"But Graphics Sell!" Is the justification proffered for the mania over graphics. "Hey, we're not imposing our own values on the customer, we're just giving them what they want. Products with lots of impressive cosmetics sell. Products with weak cosmetics don't sell. Crawford's theories are all sound; the only problem is, they don't make money."

This argument appears compelling, but its wording belies a catch. Yes, graphics sell — but to whom? Exactly who is buying these graphics extravaganzas? Well, customers, of course — but what kind of customers? I would argue that graphics sell only to customers who value graphics. At this point, the "industry wisdom" response is that, of course, everybody values good graphics. That's self-evident.

Here we come to the fundamental logic misstep: industry people are guilty of

assuming that the general public shares their own values. We all love graphics so much, we just can't imagine how anybody else wouldn't share our joy at a clever animation. But the belief that the general public values good graphics is nothing more than an assumption, a wild unsubstantiated theory. We need solid facts, facts directly related to the public's real interests.

Sales figures for individual products aren't the most revealing statistics to use here, because their interpretation is dependent on lots of other factors. For example, consider the role that the distribution system plays in distorting the customer feedback. We often call it "the pipeline," a term that suggests that we stuff product into this passive pipeline, and customers purchase what they like. On the contrary, the distribution system is an active element in the equation, one that can reinforce an industry's misperceptions. If the distributors and retailers decide that cosmetics sells product (as they have indeed done), then they're not going to carry cosmetically challenged product, and, voila! we have our proof before the public even gets a chance to vote with its dollars.

Of course, the whole point of the retail system is to allow experimentation that permits good new ideas to make lots of money, but that experimental opportunity works much better in the positive direction than in the negative direction. If we have a hot new Madonna Cone-Grabbing game, we can try shelf-talkers, self-display racks, posters, and all sorts of positive experiments to goose sales. If the public decides that Cone-Grabbing just isn't entertaining, then we shrug our shoulders; at least we gave it a try. But when it works in the other direction, when our industry expectations run against a class of products, the public never gets that chance to surprise us.

No, we need data that is more fundamental, more pertinent to our problem. And I have just the numbers to make my case. Consider first that there are more than 25 million home computers installed in the United States. Not personal computers, not business computers, but computers actually installed in people's homes.

But now let's look at some other numbers. A typical computer game might sell 50,000 units; a good one will sell 100,000 units. The best-selling computer games sell perhaps a quarter of a million units. Now these numbers might seem good, but compare them with the installed base of home computers. Our best-selling games achieve a market penetration of 1%.

Look at it this way: 99% of all potential customers turn their noses up at our best-selling games. Sure, graphics sell, but they sell to a very small subset of the possible computer population. For the vast majority of possible customers, graphics don't have any proven sales value.

We are doing something seriously wrong, folks. We have missed the boat. The home computer revolution has arrived, millions of people have home computers, and yet we're still selling games by the thousand, not the million. We blew it bigtime; perhaps it's time to re-evaluate some of our assumptions.

At this point, a possible counter-argument arises. It runs like this: "The general public is even less tolerant of poor cosmetics than computer aficionados. They are waiting for decent graphics. We must redouble our efforts to provide graphics, animation and sound that will appeal to the masses, not just computer nerds. Only then will the penetration rate increase."

Here we come to the fundamental logic misstep: Industry people are guilty of assuming that the general public shares their own values

This argument collapses when we consider the historical record. We can all agree that graphics, animation, and sound have all improved dramatically over the years. This argument would predict that penetration rates would have increased along with the quality of our cosmetics. But in fact the reverse is the case. In the early '80s, the typical computer game sold about 10,000 units and the best selling games sold 100,000 units, on installed bases of perhaps a million machines. That's a penetration rate of 10% for best-selling games, 10 times better than the penetration rates achieved today.

So penetration rates have decreased even as cosmetic quality has increased. What more proof do we need that better graphics are not the way to the promised land? It's plain to see.

Another argument in defense of giving primary importance to graphics is that "Graphics are necessary to the fantasy. If the player is moving around in a dungeon, or flying an airplane, or wandering in a forest, shouldn't we show the dungeon, sky, or forest as clearly as possible? Aren't detailed walls, textured landscape, and realistic trees better than line drawings or crude sketches?"

The way games ought to be...

This argument belies the narrow-minded obsession that designers have with spatial issues. Notice that all three examples involve moving around in a spatial universe. Visual stimuli are necessary for successful navigation, and so, yes, better graphics are essential for such games. But why must our games always be so cloyingly spatial? Why are we always navigating, targeting and maneuvering? How many movies focus their attention on the spatial behaviors of the characters? The design community has missed the boat here, we spend all our time designing games about trivia when the rest of the world cares more about nonspatial factors. And if you concentrate on nonspatial factors, the argument in favor of graphics loses force.

Then there are people who say "Better graphics can't hurt and always help. C'mon, Chris, you can't be claiming that, given a choice between better cosmetics and worse cosmetics, we ought to choose the worse cosmetics. Any product will be more entertaining if it has better imagery, better sounds, and better animation."

This argument ignores business realities. Products are built on budgets with schedules. You have only so much time and money to put into the product. Every dollar spent on cosmetics is a dollar that is not spent on the other elements of interactivity (listening and thinking). Every day's work devoted to cosmetics is a day that is not devoted to interactivity.

"But text is boring." This is a straw man argument. It presumes that the only alternative to state-of-the-art, budget-breaking graphics is plain text on a black background. The reality is that we have a wide range of options, most of which are graphic but don't push the envelope.

I argue against the extremist notion that cosmetics are the primary criterion for quality in interactive entertainment. I instead argue for the notion that cosmetics play a vital supporting role in successful interactivity. We should design our products with enough graphics, animation and sound to support the interaction, without detracting from it. ng

The way games ought to be...
This essay was first published in *Interactive Entertainment Design*, edited by Chris Crawford.
For more information contact ChrisCr@aol.com

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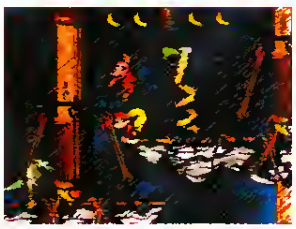
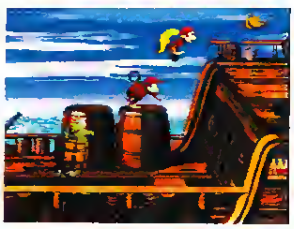
Diddy's back and better than ever.

Fasten your seat belt. This monkey's coming full throttle. Donkey Kong Country 2™: Diddy's Kong Quest™. Sleek, stylish and fully loaded. With ACM graphics, 32 megs and so many new levels, it even outperforms last year's model. But don't take our word for it. Let Diddy take you once around the park — sunken pirate ships, roller coasters, beehives. (Watch the sticky stuff!)



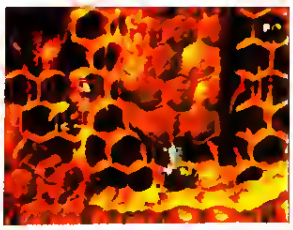
Torrential rain, bloodthirsty pirates, and now your ship is sinking...have a nice day.



Dixie twirls her ponytail to fly chopper style—talk about a buzz cut!

Guess who's back in town.

Or take his new pal Dixie for a spin — literally. This chimpette flies! There are other special moves too, like the **Buddy Toss** (please kids, don't try this at home). We even threw in a bunch of multiple endings. But hey, what do you expect from the **biggest evolution** in history. Except another game that leaves everything else far behind. (Ever been behind a monkey? It **ain't pretty.**)



Look alive! There's more hidden stuff than ever.

Now there are smarter Kremlings out to slap your monkey around. Ouch!

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